Operation & Service Manual
for Paradise Lost 42" Deluxe Cabinets

040-0204-01 Rev. B

- **Read this manual before use.**
- **Keep this manual with the machine at all times.**

www.globalvr.com
http://service.globalvr.com
techsupport@globalvr.com
Phone: 408.597.3435
Fax: 408.597.3437

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Preface

Safety

Please read this page before preparing your arcade cabinet for game play.

The following safety instructions apply to all game operators and service personnel. Specific warnings and cautions will be included throughout this manual.

Use the following safety guidelines to help protect the system from potential damage and to ensure your personal safety:

- Electronic components in the game cabinet run on 115 VAC. The voltage switch on the back of the computer must be set to 115. If you power up the computer outside of the cabinet, set the switch to match the local AC voltage:
  - 115 volts / 60Hz in most of North and South America and some Far Eastern countries such as Japan, South Korea and Taiwan
  - 230 volts / 50Hz in most of Europe, the Middle East and the Far East
- To help prevent electric shock, plug the system into a properly grounded power source. These cables are equipped with 3-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a 3-wire cable with properly grounded plugs.
- To help protect your system from sudden increases and decreases in electrical power, use a surge suppressor, line conditioner or Uninterruptible Power Supply (UPS).
- Be sure nothing rests on the system's cables and that the cables are not located where they can be stepped on or tripped over.
- Keep your system far away from radiators and other heat sources.
- Do not block cooling vents.

Precautions for Game Operation

- To avoid injury and accidents, people who fall under the following categories should not play the game:
  - Those who need assistance when walking.
  - Those who have high blood pressure or a heart problem.
  - Those who have experienced muscle convulsions or loss of consciousness when playing a video game or similar activities.
  - Those who have trouble in the neck or spinal cord.
  - Intoxicated persons.
  - Pregnant women.
  - Persons susceptible to motion sickness.
  - Persons who do not abide by the warning labels on the game.
- A player who has never been adversely affected by light stimulus might experience dizziness or headache when playing the game. Small children can be especially susceptible to these conditions. Caution guardians of small children to keep watch over their children during play.
- Instruct those who feel sick during play to see a doctor.
- To avoid injury from falling objects, and electric shock due to spilled drinks, instruct players not to place heavy items, food, or drinks on the product.
- To avoid electric shock or short circuit, do not allow customers to put hands and fingers or extraneous matter in the openings of the product.
- To avoid risk of injury from falling, immediately stop customers from leaning against or climbing on the product.

Warnings

To avoid electrical shock, unplug the cabinet before performing installation or service procedures.

If the power cord is damaged, it must be replaced by the equivalent power cord available from GLOBAL VR or your distributor.

GLOBAL VR® assumes no liability for any damages or injuries incurred while setting up or servicing the cabinet. Only qualified service personnel should perform installation or service procedures!

Environmental Conditions

Cabinet is intended for indoor use only. Be sure to keep the cabinet dry and maintain operating temperatures of 59°—86°F (15°—30°C).

FCC Notices (United States)

Electromagnetic Interference (EMI) is any signal or emission radiated in free space or conducted along power or signal leads, that endangers the functioning of radio navigation or other safety service, or that seriously degrades, obstructs, or repeatedly interrupts a licensed radio communications service. Radio communications services include, but are not limited to, AM/FM commercial broadcast, television, cellular services, radar, air-traffic control, pager, and Personal Communication Services (PCS). These licensed services, along with unintentional radiators such as digital devices (including computer systems) contribute to the electromagnetic environment.

Electromagnetic Compatibility (EMC) is the ability of items of electronic equipment to function properly together in the electronic environment. While this computer system has been designed and determined to be compliant with regulatory agency limits for EMI, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference with radio communications services, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Re-orient the receiving antenna.
- Relocate the cabinet relative to the receiver.
- Plug the game into a different outlet so that the computer and the receiver are on different branch circuits.

If necessary, consult a Regulatory EMC representative of GLOBAL VR® or an experienced radio/television technician for additional suggestions. You may find the FCC Interference Handbook, to be helpful. It is available from the U.S. Government Print Office, Washington, DC 20402.

This device has been tested and complies with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Operation is subject to the following conditions:

- This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

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Chapter 1 — Introduction

Cabinet Specifications

Figure 1. Cabinet Dimensions

Power Requirements (Approximate)

115 VAC

- Inrush AC Current: 8 Amps
- Operating AC Current: 5 Amps

230 VAC

- Inrush AC Current: 4 Amps
- Operating AC Current: 3 Amps

Hardware Features

- Pentium® computer
- Nvidia® GeForce® graphics
- 512 megabytes RAM
- 42-inch widescreen LCD monitor
- Enhanced audio with subwoofer
- Supports dollar bill validator
- Unique cabinet configuration with dramatic lighting effects
- Mounted guns with force-feedback recoil action and LED ammo readout
- USB Gun interface

Chapter 2 — Installing a New Cabinet

Use the following procedure to install a new cabinet:

1. Carefully remove the cabinet from the shipping container, giving yourself plenty of space around the cabinet. Inspect the exterior of the cabinet for any damage.
2. Remove the keys from the coin return slot. Open the coin door to locate the second set of keys (see Figure 2).

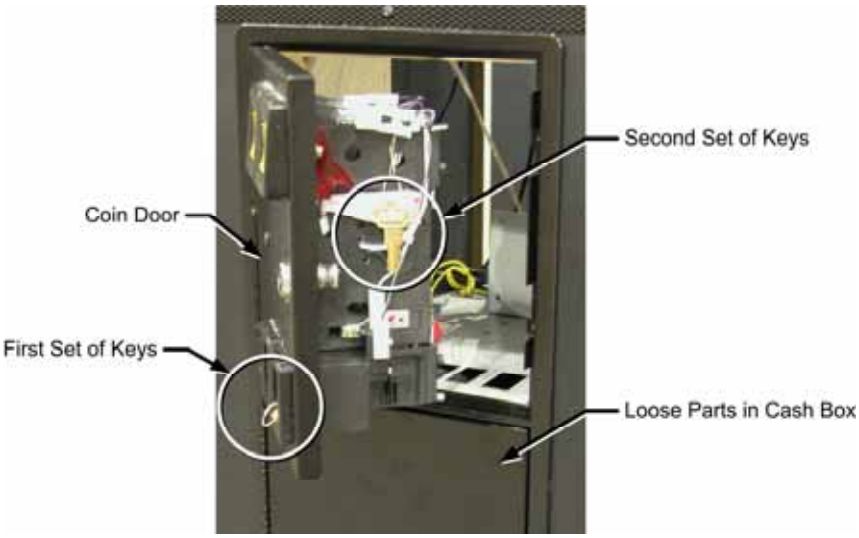

Figure 2. Coin Door with Key Locations

3. Unpack the marquee front. Remove the five (5) nuts and washers from the pre-installed screws with standoffs, shown by the rectangles below. (Leave the standoffs in place.) Remove the three (3) wood screws, shown by the circles below, from the back of the support piece at the top. Use this hardware to secure the marquee front in place on top of the cabinet.
4. Connect the AC power cord to a grounded outlet and power on the game.
5. Play a game to verify everything is working properly.
6. Refer to Chapter 4 for information on using the Operator menus to set up your game.

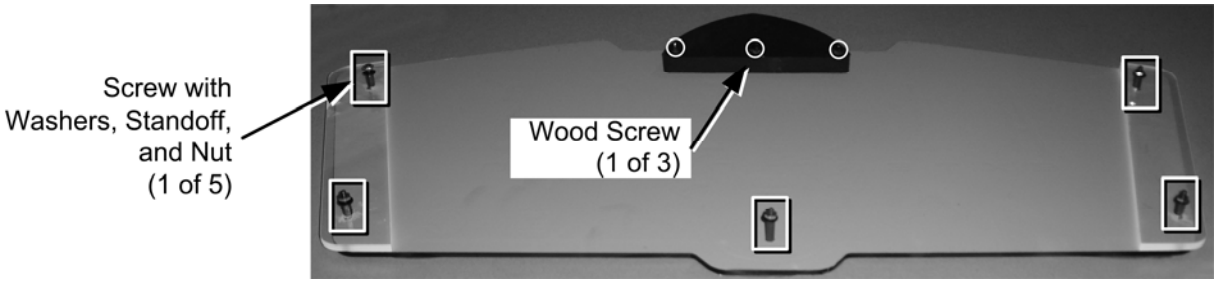

Figure 3. Back of the Marquee Front

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Chapter 3 — Playing a Game

The picture below shows a gameplay screen with the General information and Player-1 information fields labeled. The corresponding information fields for Player-2 are displayed on the right side of the screen.

7. After you coin up, a menu screen will appear; point a gun at the level you want to play, and pull the trigger. (Another player can join in by inserting coins and using the other gun.)
8. Shoot at everything that moves—there are no friends in this game! Shoot the enemies before they shoot you.
9. Shoot at crates to pick up rockets and grenades, armor, and health. Use the triggers to fire the machine gun, and the thumb buttons to fire the grenades and rockets.
10. Once you complete a level, you will return to the main menu to select another level. Complete any level to unlock Level 5.
11. When your game is about to end, a countdown appears onscreen. Insert coins to continue.

Note: To insert Service Credits for testing the game, press the **SELECT** button during Attract Mode. Each press will add one credit for each player.

Chapter 4 — Operator Menu and Game Setup

This chapter describes the Game Operator menus, their functions, and default settings. These menus let you set up the game, diagnose problems, and view gameplay and earnings statistics.

Navigating the Menus

1. Open the coin door and press the red **TEST/BACK** button to open the Operator **Main Menu**.
2. Use the **VOL UP** and **VOL DN** buttons to navigate through the list of submenus on the left side of the screen. The name of each submenu will change color as it is highlighted, and the submenu will appear, grayed out, in the main pane. Press the green **SELECT** button to select a submenu.
3. After you select a submenu, use the **VOL UP** and **VOL DN** buttons to highlight items in the submenu, and then press the **SELECT** button to select an item.
4. Once you have selected a menu item, use the **VOL UP** and **VOL DN** buttons to change the setting. When you finish, press **TEST/BACK** to exit from the item.
5. To exit from a submenu, press the **TEST/BACK** button. To close the Operator Menu, highlight **Return to Game** (pressing the **TEST/BACK** button when you are not in a submenu will automatically highlight this item) and press **SELECT**.

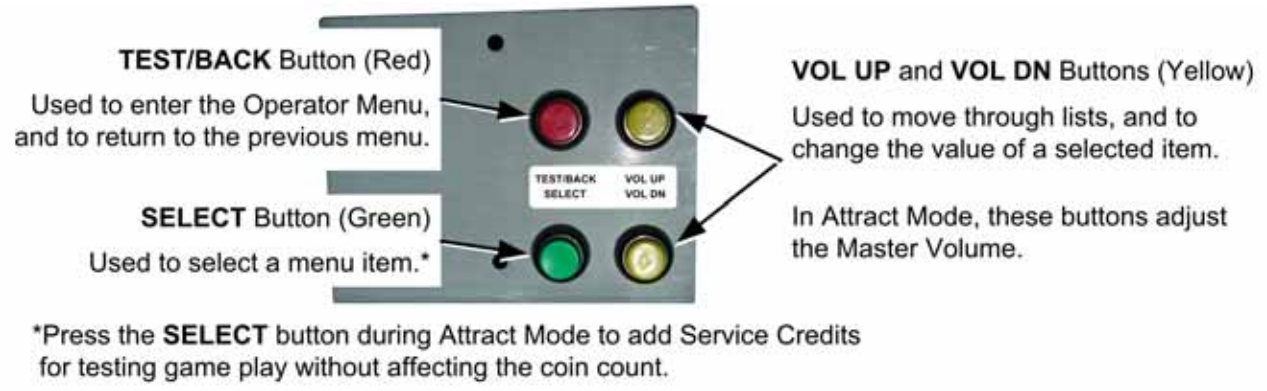
TEST/BACK Button (Red)
Used to enter the Operator Menu, and to return to the previous menu.
SELECT Button (Green)
Used to select a menu item.*
TEST/BACK SELECT
VOL UP VOL DN
VOL UP and **VOL DN** Buttons (Yellow)
Used to move through lists, and to change the value of a selected item.
In Attract Mode, these buttons adjust the Master Volume.
*Press the **SELECT** button during Attract Mode to add Service Credits for testing game play without affecting the coin count.

Figure 4. Operator Buttons

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Menu Screen Layout

The left side of the screen displays a list of menus. As you use the **VOL UP** and **VOL DN** buttons to move through the menu list, each menu is displayed in the center pane of the screen. The menu is shown in gray until you enter it. To enter a menu, press the **SELECT** button.

The right side of the screen displays important information about the cabinet and software. These items are explained in the table below.

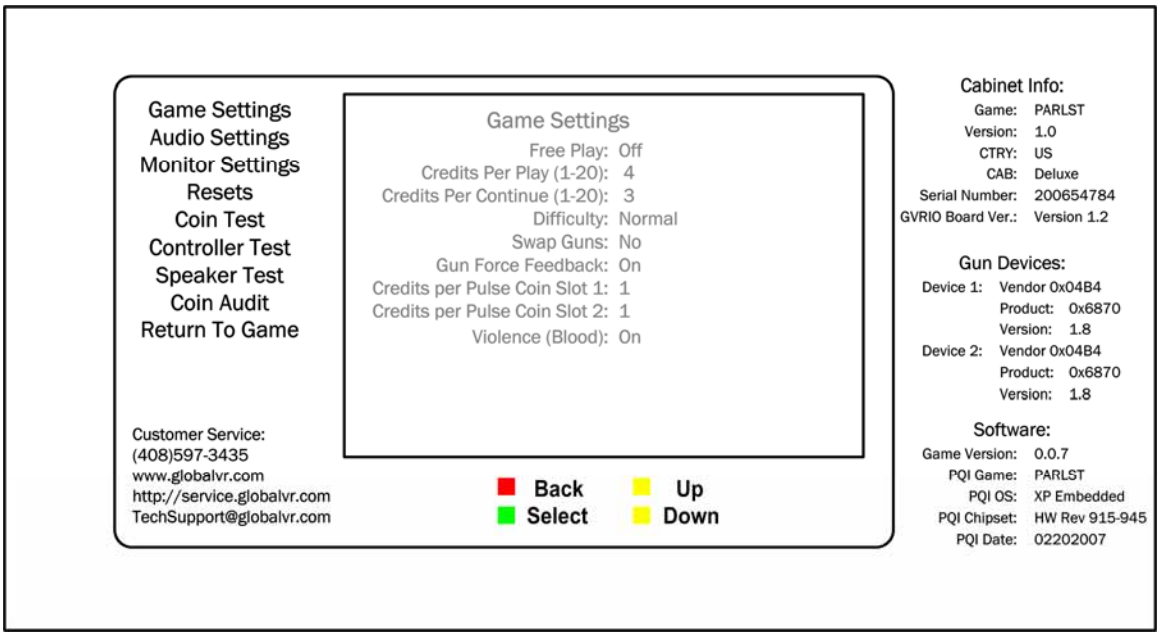

Figure 5. Overall Menu Screen Layout

Item	Description
Cabinet Info	This section lists information about the cabinet and game dongle
Game	Abbreviation for name of game installed
Version	Game Dongle Version
CTRY	Country where the game is licensed, as set by the game dongle
CAB	Style of cabinet, *Deluxe* (for sit-down game) or *Standard* (for upright game)
Serial Number	Serial Number of the Game Dongle
GVRIO Board Ver.	Version of the GVRI/O Mini PCB Installed
Gun Devices	This section lists specs on each gun
Vendor	Gun PCB Vendor Code
Product	Gun PCB Product Code
Version	Gun PCB Version Number
Software	This section lists specs for the software
Game Version	Game software version
PQI Game:	Abbreviation for name of game installed
PQI OS	The operating system (OS) used by the computer
PQI Chipset	Computer chipsets supported by the software
PQI Date	Revision date of the Operating System

Game Settings Menu

The Game Settings menu lets you set up the general pricing and game play settings.

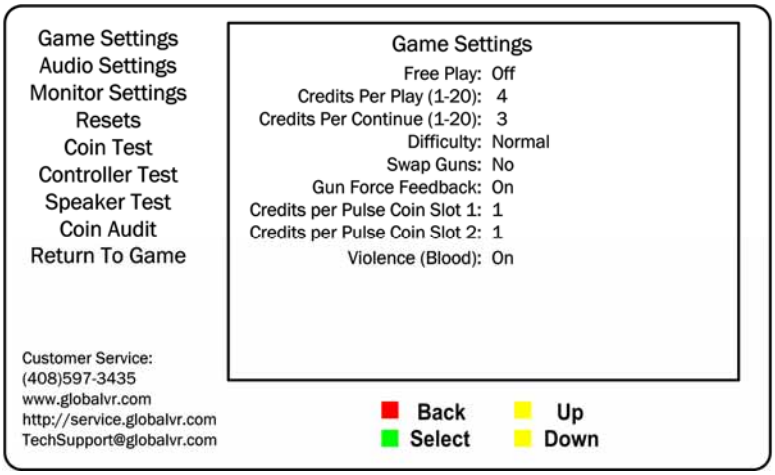

Figure 6. Game Settings Menu

Menu Item	Description
Free Play	Turns Free Play On or Off (default: Off).
Credits Per Play	Sets the number of credits to start a game (default: 4).
Credits Per Continue	Sets the number of credits to continue a game (default: 3).
Difficulty	Sets overall game difficulty (*Very Easy, Easy, Normal, Hard,* or *Very Hard*) (default: Normal).
Swap Guns	Setting *Yes* swaps guns 1 and 2. This lets you compensate if the guns are connected backwards and the force-feedback recoil and LED flash occurs in the wrong gun.
Gun Force Feedback	Turns force-feedback recoil On or Off (default: On).
Credits per Pulse	Sets the credits per pulse for the coin mech (default: 1). (Coin Slot 2 is not used.)
Violence (Blood)	Setting this to Off turns the blood off, and changes "head-shots" to "power shots." Options are On or Off (default: On).

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Audio Settings Menu

This menu lets you adjust volume levels.

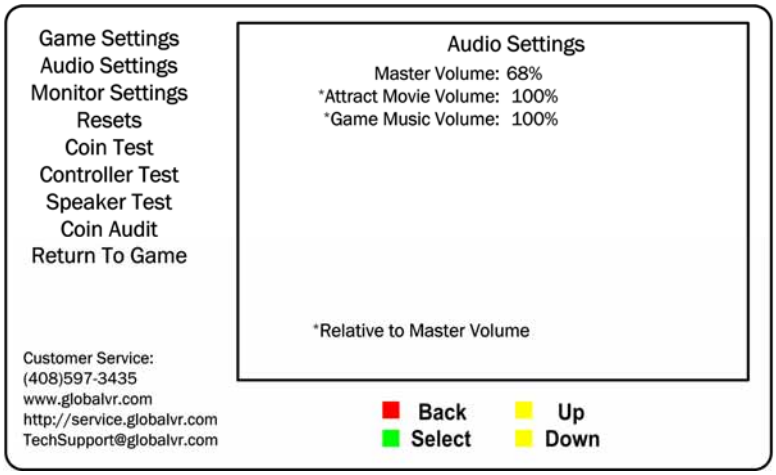

Figure 7. Audio Settings Menu

Menu Item	Description
Master Volume	Sets Master Volume.
Attract Movie Mode	Sets Attract Movie Volume relative to Master Volume.
Game Music Volume	Sets Game Music Volume relative to Master Volume.

Monitor Menu

This menu lets you adjust the video image quality, and view monitor test screens.

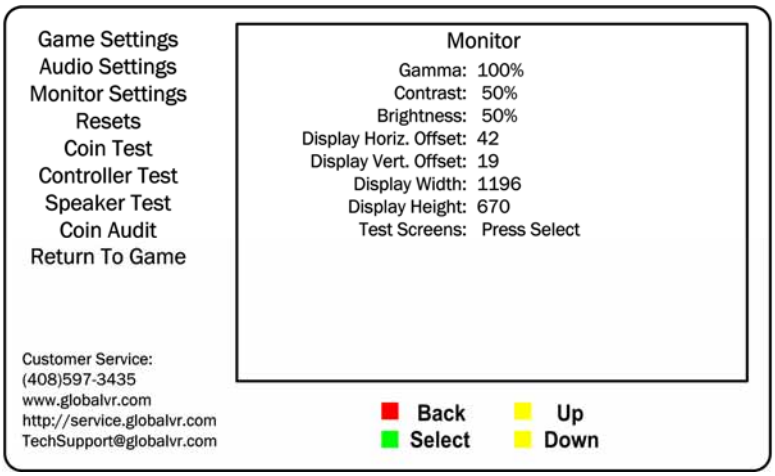

Figure 8. Monitor Menu

Menu Item	Description
Gamma	Increases or decreases the overall screen brightness.
Contrast	Adjusts screen contrast.
Brightness	Adjusts screen brightness.
Display Horiz. Offset	Lets you move the image left or right in pixels.
Display Vert. Offset	Lets you move the image up or down in pixels.
Display Width	Lets you adjust the width of the image in pixels (normally 1280).
Display Height	Lets you adjust the height of the image in pixels (normally 720).
Test Screens	Displays test screens designed to help you adjust video geometry and colors. Once you select the test screens, use the **VOL UP** and **VOL DOWN** buttons to cycle through the screens, and the **BACK** button to exit.

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Resets Menu

This menu lets you reset coin audits and available credits, or restore the cabinet to factory default settings. Highlight an item and press the **Select** button to reset. Text on the screen will confirm the item has been reset.

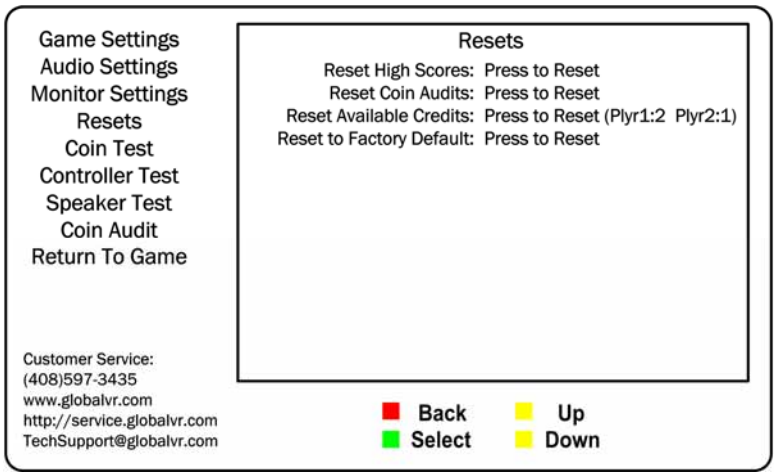

Figure 9. Resets Menu

Menu Item	Description
Reset High Scores	Clears the high scores saved in the software.
Reset Coin Audits	Resets Current Coin Audits to zero (0). Does not affect Lifetime Coin Audits.
Reset Available Credits	Resets Available Credits to zero (0) for both players. The number of available credits for each player is shown in parentheses.
Reset to Factory Default	Restores cabinet to factory default settings. Does not affect scores or audits.

Coin Test Menu

This menu lets you test the coin inputs. Activate each coin input or optional dollar bill validator and confirm that the **Coin Count** number increments by the expected amount.

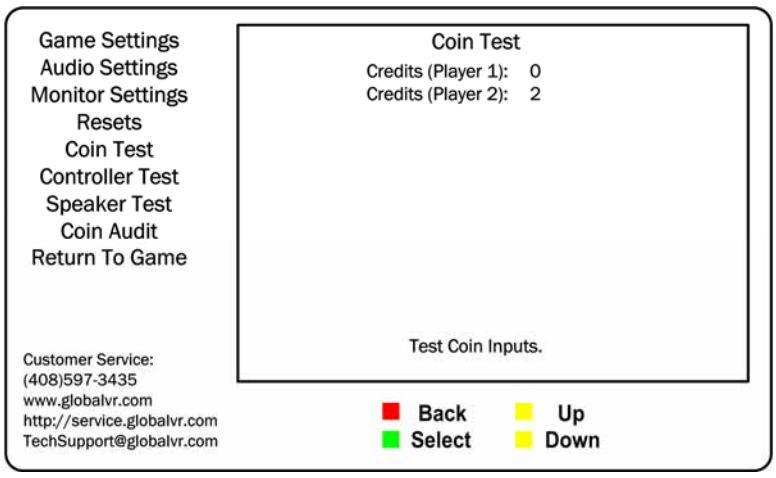

Figure 10. Coin Test Menu

Controller Test Menu

This menu lets you test and calibrate the guns.

The menu displays two large squares on the screen. Each square represents the range of motion for one of the guns. The numbers above each square show the current X and Y range for the gun and the current position. The small blue cursor in the square represents the current position of the gun. As you move the gun, the cursor will move and the current position numbers will change.

Under each large square you will see a small block labeled **Trigger** that will highlight when you pull the trigger for that gun. The small block labeled **Hat** will highlight when you press the thumb button.

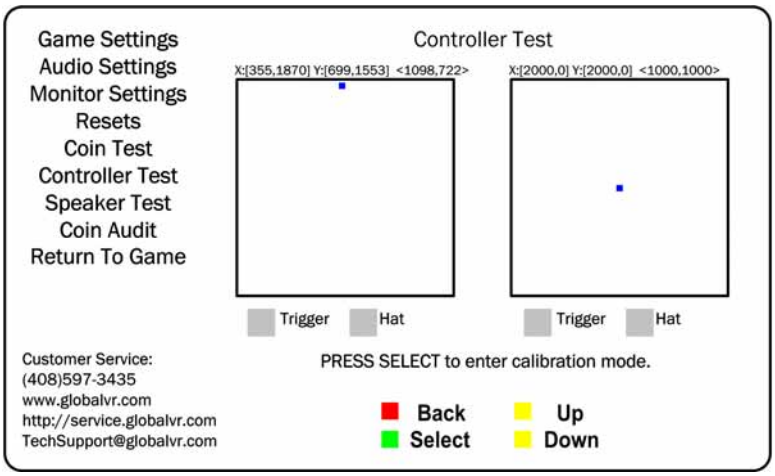

Figure 11. Controller Test Menu

Perform the steps below to calibrate a gun from the Controller Test screen:

12. Press the **SELECT** button to enter Calibration Mode.
13. Pull the trigger of the gun you wish to calibrate, and refer to the square on that side of the screen.
14. An arrow will appear on the left side of the screen, and a prompt will tell you to point the gun all the way to the left and pull the trigger. Be sure to point the gun all the way to the left before pulling the trigger.
15. Follow the onscreen instructions as you are prompted to point the gun to the right and pull the trigger, followed by up, and then down.
16. Once you finish, you can calibrate the other gun, or press the **BACK** button to exit.

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Speaker Test Screen

This screen tests each speaker on the cabinet. As soon as you press **SELECT** to open this screen, the test sounds will start playing. Each speaker, in turn, will play its name. Curved lines by the onscreen icons show which speaker is playing (as shown for the Front Left speaker below). The test will continue until you press the **BACK** button to exit.

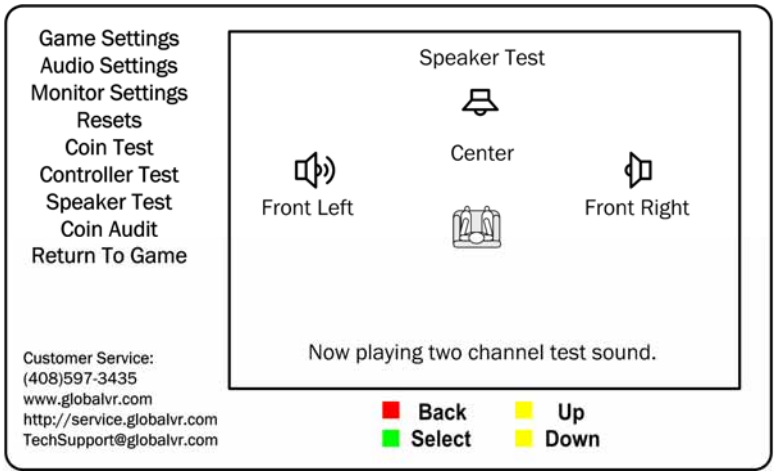

Figure 12. Speaker Test Menu

Coin Audit Menu

This menu displays current and lifetime coin audit information. The top half displays data since the last time the Coin Audits were reset from the Resets menu, and the bottom half displays lifetime data since the software was installed.

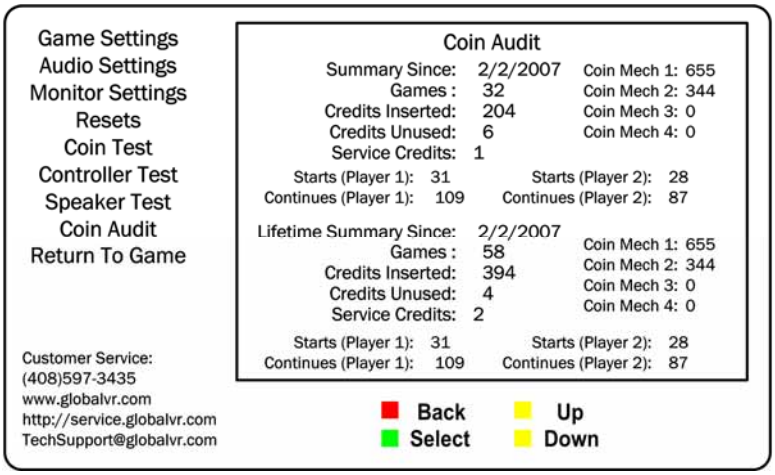

Figure 13. Coin Audit Menu

Menu Item	Description
Summary Since	Displays the date when the Coin Audits were last reset from the Resets menu.
Lifetime Summary Since	Displays the date when the software was installed and began recording coin audit data.
Games	Displays total games played.
Credits Inserted	Displays total Credits inserted. (Coin Mech 2 is for the Optional Dollar Bill Validator. Coin Mechs 3 and 4 are not used.)
Credits Unused	Displays total unused Credits.
Service Credits	Displays total Service Credits inserted. Operators can insert Service Credits for testing the game by pressing the **SELECT** button during Attract Mode. Each press adds one credit for each player.
Starts	Lists games started for Player 1 and Player 2.
Continues	Lists games continued for Player 1 and Player 2.

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Chapter 5 — Software Restoration

Follow the instructions below if you need to re-install software on your cabinet. Total installation time is about 15-20 minutes.

Important: When you use the System Recovery Disk, you will erase all game settings, and coin and game audits. It is advisable to contact Technical Support before using the System Recovery Disk to resolve a problem.

System Recovery Disk

1. With the cabinet powered ON, open the DVD-ROM drive and insert the CD labeled **System Recovery Disk**. Power the cabinet OFF and then ON. The computer will boot from the CD, and you will see the installer screen on the monitor.
2. After about 5 minutes, when you are prompted, remove the CD and turn the cabinet OFF and then ON. (**Do not** insert the Game Install Disk yet!)
3. When the computer reboots, you will see a series of processing screens. After about 3-4 minutes the computer will automatically reboot. You will briefly see a message saying "Insert Game Disk 1", followed by the GLOBAL VR logo on the screen. Proceed to install the Game Install Disk as described below.

Game Install Disk

1. Open the DVD-ROM drive and insert the DVD labeled **Game Install Disk 1 of 1**. The computer will read the DVD automatically (do not reboot). You will see the Installer screen as the software copies files, and after about 6-7 minutes the computer will reboot.
2. After about 1 minute more, Initial Calibration screen will appear. Remove the disk from the DVD-ROM drive.
3. Press the **TEST/BACK** button to open the Operator Menu. Select **Controller Test** and follow the onscreen prompts to calibrate both guns.

   Note: The Initial Calibration screen will be displayed until you open the Operator Menu.
4. Use the Operator Menus to change any desired settings.
5. Play a game and use both guns to verify proper operation. (Press the **SELECT** button in Attract Mode to insert Service Credits for testing the game.)

Chapter 6 — Service and Repair

CAUTION: GLOBAL VR assumes no liability for any damage or injuries incurred while servicing the cabinet. Only qualified service personnel should perform service and installation of cabinet hardware.

To prevent electrostatic discharge (ESD) damage, handle PCBs by the edges only and use a grounding wrist strap or similar precaution.

Please read the service instructions before working on the cabinet.

DANGER

Always turn the cabinet OFF and disconnect the AC power cord before performing any repair work.

Audio System Service

The figure below shows the wiring for the Audio System. Please refer to this figure to check audio connections or troubleshoot the audio system.

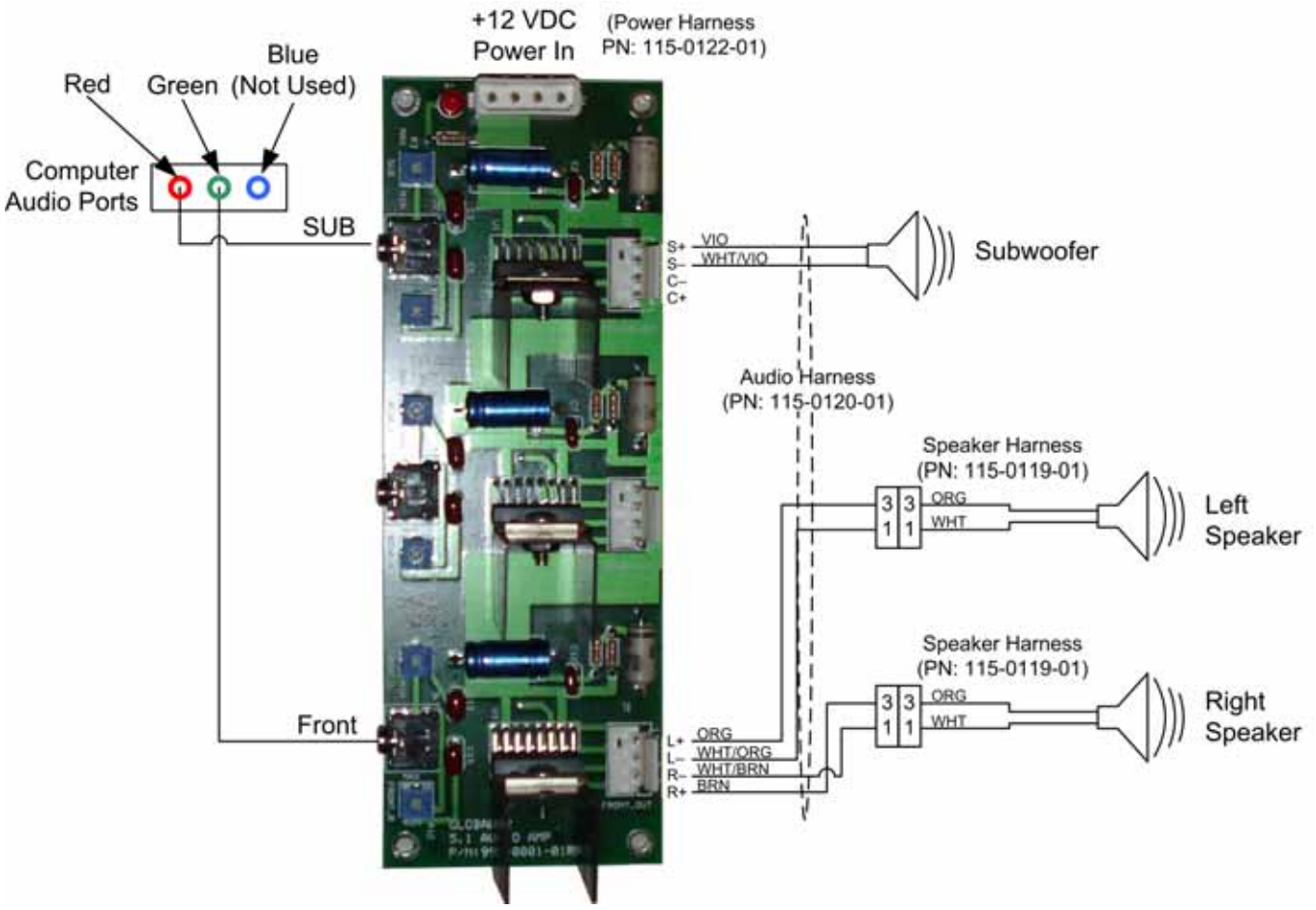

Figure 14. Audio Wiring

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Speaker Replacement

If you need to replace the left or right speaker, do the following:

1. Remove the lower door from the back of the cabinet.
2. Inside the cabinet, disconnect the Molex® connector that secures the speaker harness to the main audio harness.
3. Inside the cabinet, remove the two (2) nuts and washers that secure the speaker in place.
4. Outside the cabinet, remove the two wood screws that secure the speaker under the monitor housing.
5. Remove the speaker with the mounting bracket.
6. Remove the two (2) screws that secure the speaker to the mounting bracket.
7. Reverse these steps to install the new speaker.

Subwoofer Replacement

The subwoofer is located behind the grill below the monitor.

1. Remove the four (4) Torx® security screws that secure the speaker grill to the cabinet.
2. Remove the four (4) screws that secure the subwoofer to the cabinet.
3. Remove the wires from the subwoofer and install them to the same connectors on the replacement subwoofer.
4. Reverse these steps to re-install the subwoofer.
5. Run the **Sound Test** from **System Tests** in the Operator Menu to verify proper operation.

Gun Service

The subsections that follow describe steps for testing and replacing the gun components.

The gun body contains micro switches for the trigger, grenade button, and flamethrower button, and a coil and plunger assembly that creates the force-feedback recoil effect when the gun is fired. To service these parts, you need to open the gun case. See Figure 21 for a view of the open gun assembly.

The base of the gun contains pots that relay the gun position to the computer. If the gun position is not being read properly, refer to the gun pot service steps on page 24. You **do not** need to open the gun case to test or replace the pots.

Gun Power Harness Fuses

The gun power harness has two fuses, one for each gun. If a gun has no power, check the fuse and replace if necessary. Spare fuses are taped to the harness near the fuse holder. Replace with MDL 2A Slo Blo fuses.

Opening the Gun Case

Open the gun case to service the trigger, buttons, and coil assembly. You **do not** need to open the case to service the pots that aim the gun (see page 24). See Figure 21 for a view of the open gun assembly

1. To open the gun case, first remove the 12 Torx security screws shown by the single arrows in the picture below, and remove the corresponding nuts from the other side of the gun.
2. Remove the four screws shown by the double arrows in the picture below. These screw into the frame, so there are no nuts to remove.
3. Carefully remove the left side cover from the gun, being careful not to pull the wires from the grenade button on the cover. The wires are long enough that you can set the cover on the control panel near the gun without disconnecting the wires.

Figure 15. Gun Case Screws

Closing the Gun Case

1. To close the gun case, first align the slots that fit around the gun PCB (with the LED display), and then carefully put the two halves together. Make sure no wires or components get caught or pinched. Pay special attention to the area around the trigger and spring, the wires coming out of the frame shaft, and the wires attached to the coil and barrel light.
2. Insert the four (4) 3/8" x 10-32 screws shown with the double arrows in Figure 15. Partially tighten all four screws, verify the case is mating properly, and then tighten the screws snugly.
3. Check the trigger to make sure it works properly. The trigger or spring could shift while you are assembling the case.
4. Replace the remaining 8-32 screws and nuts, shown by the single arrows above, and tighten snugly. The screw at the top of the muzzle end is 3/4" long, and the two screws in the handle are 1" long, as shown above. All of the other screws are 1 ¼" long.

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Gun Trigger Service

To replace the trigger spring, refer to the picture below for the placement of the spring in the gun housing.

Install the plastic trigger so it presses against the spring, and the bottom part of the trigger will press the switch actuator when a player pulls the trigger.

To replace the micro switch, remove the two screws that secure the switch in place. Remove the two wires and install them on the same terminals on the replacement switch.

Be sure to connect the signal wire to the **NO** connector (middle connector) and the black ground wire to the **C** connector.

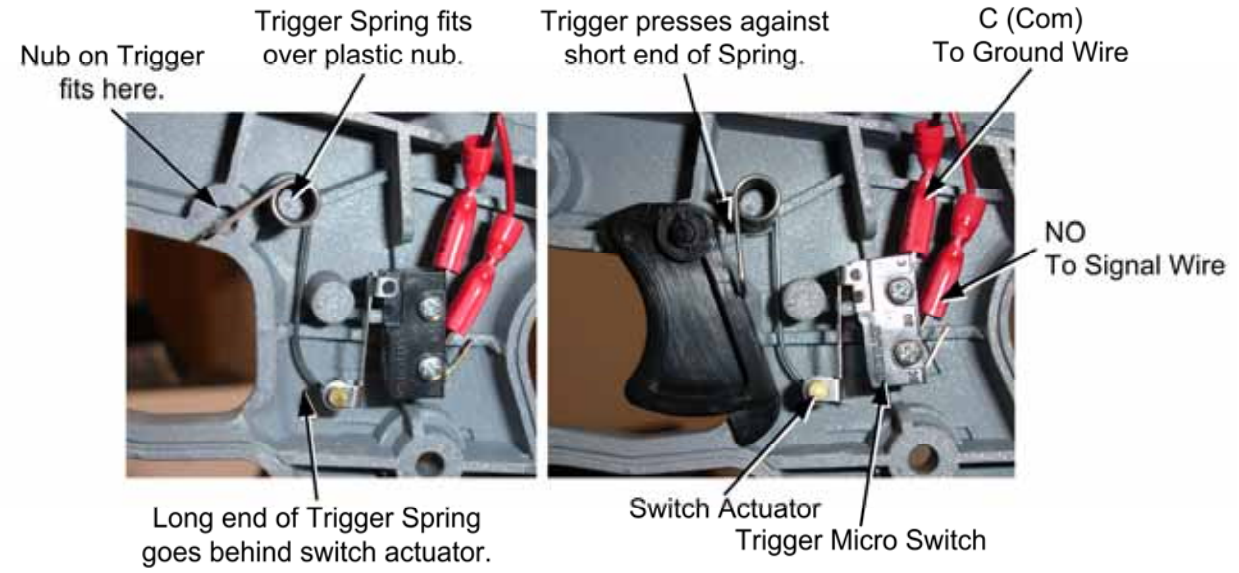
Nub on Trigger fits here.
Trigger Spring fits over plastic nub.
Trigger presses against short end of Spring.
C (Com) To Ground Wire
NO To Signal Wire
Long end of Trigger Spring goes behind switch actuator.
Switch Actuator
Trigger Micro Switch

Figure 16. Gun Trigger Assembly

Gun Button Service

Refer to Figure 17 for components of the lighted buttons used for the grenade and flamethrower features.

If you replace a button micro switch, be sure to connect the signal wire to the **NO** connector (middle connector) and the black ground wire to the **C** connector. If you connect the wires differently the button will not work.

To replace the light bulb, pull the lamp assembly straight out of the button housing, and then pull the bulb straight out of the lamp housing. The two lamp wires are interchangeable and can connect to either terminal on the lamp housing.

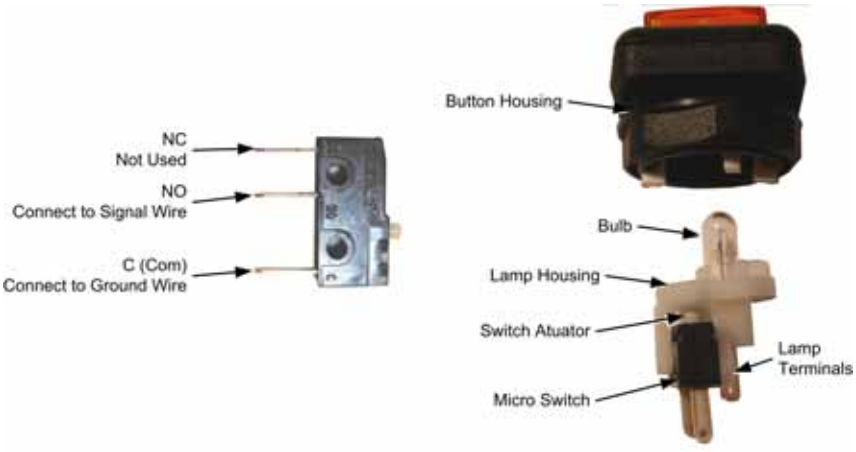

Figure 17. Gun Button, Lamp, and Micro Switch

Gun Coil Assembly Service

The coil assembly provides the force-feedback recoil when the gun is fired. Perform the following steps to replace components of the coil assembly:

1. Open the gun case as described on page 21.
2. Remove the two screws shown below from the right side of the gun.

3. Remove the nut that secures the ground wire to the ground lug on the side of the coil assembly mounting plate, as shown below.
4. Remove the two screws that secure the coil assembly mounting plate to the gun shaft, as shown below.

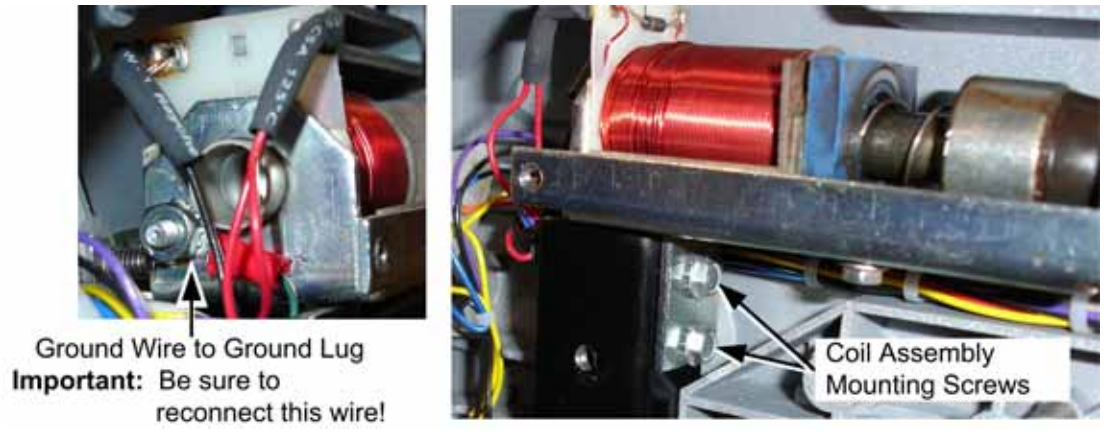

Figure 18. Gun Coil Assembly Service

5. Reverse these steps to re-install the coil assembly. Be sure to secure the ground wire to the ground lug on the coil assembly mounting plate.

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Gun Pot and Gear Service

Each gun has two pots that measure the movement of the gun on the X-axis (left and right) and Y-axis (up and down). The X-axis pot is located under the gun base below the trigger. The Y-axis pot is located on the side of the gun base below the flamethrower button.

Use the **Gun Test & Calibrate** screen from **System Tests** in the Operator menu to test gun motion. To test a pot, power off the game and test resistance at the pot. When you move the gun, you should see a steady linear increase or decrease in resistance, with no jumps. Replace the gears if they are worn or cracked.

Refer to Figure 19 for gun base components, and perform the following steps to replace a pot or gear shaft:

1. Remove the six (6) Torx security screws that secure the front and rear covers over the gun base, and remove the covers.
2. Remove the two mounting nuts and remove the metal mounting plate from the pot to be replaced.
3. Use an Allen wrench to loosen the set screw from the gear shaft, and remove the gear shaft.
4. Using a 1/2" wrench, remove the nut and lock washer that secure the pot to the frame.
5. De-solder the wires from the pot and solder them on the same terminals on the replacement pot.
6. Install the new 5KΩ pot with the same orientation. Make sure that the plastic keys on the pot mate properly with the metal.
7. Re-install the lock washer and nut, being careful not to over-tighten.
8. Re-install the gear shaft and tighten the set screw.
9. Calibrate the gun using the **Gun Test & Calibrate** screen from **System Tests** in the Operator menu after replacing a pot.

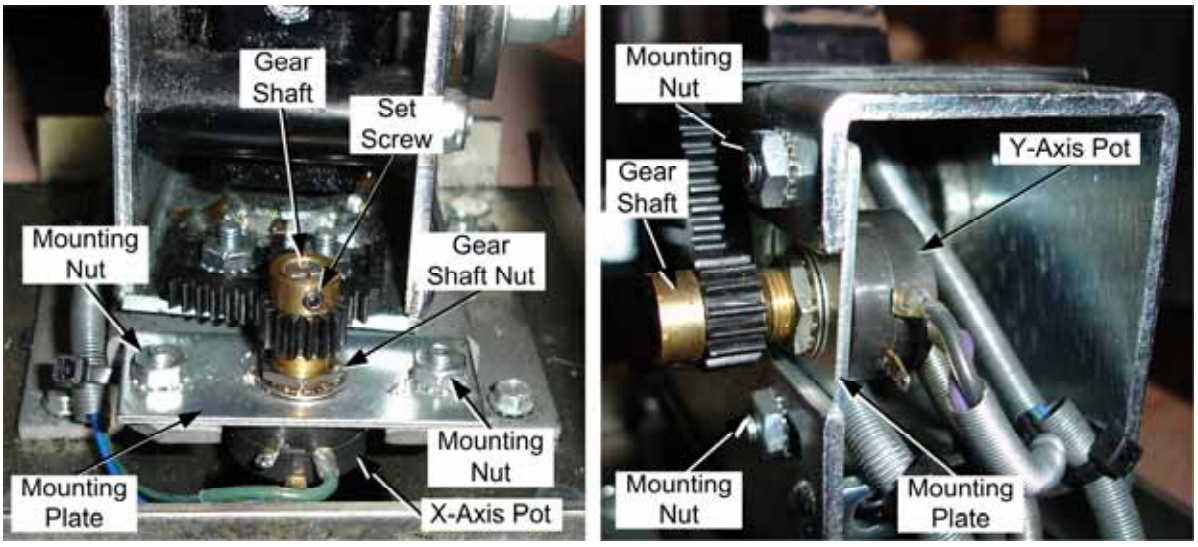

Figure 19. Gun Pot Replacement

The Gun PCB

The Gun PCB routes all signals within the gun, and between the gun and the system computer. It also has an LED display that shows remaining ammo during game play. Each connector on the Gun PCB is keyed to fit only to the correct harness connector. Refer to the picture below to locate the connectors on the PCB (layout varies depending on PCB version). See Figure 30 on page 47 for detailed gun wiring information.

To replace the PCB, open the gun case as described on page 21. Slide the PCB out of the case and disconnect all connectors. Replace PCB version 1.*x* with version 1.8; replace PCB version 5.01 only with version 5.01 or later.

Caution: Disconnect the cabinet from AC power before making any connections to the Gun PCB. Hot-plugging any connector will damage the PCB.

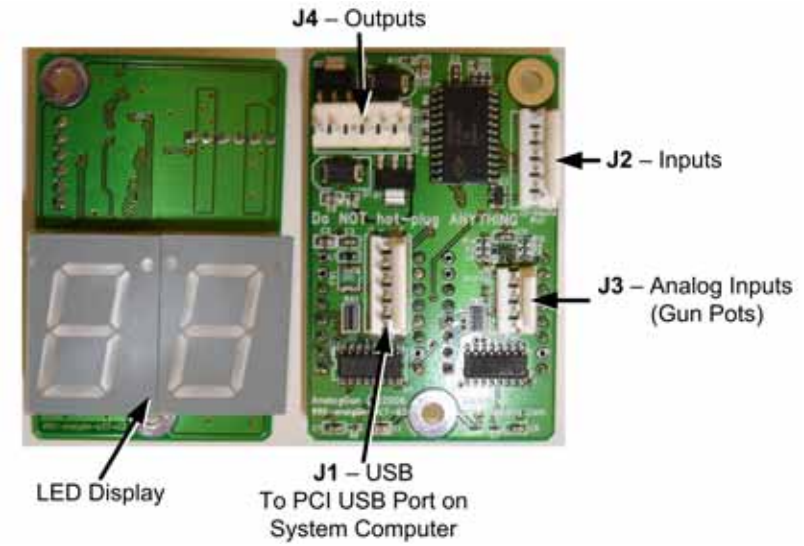

Figure 20. Gun PCB

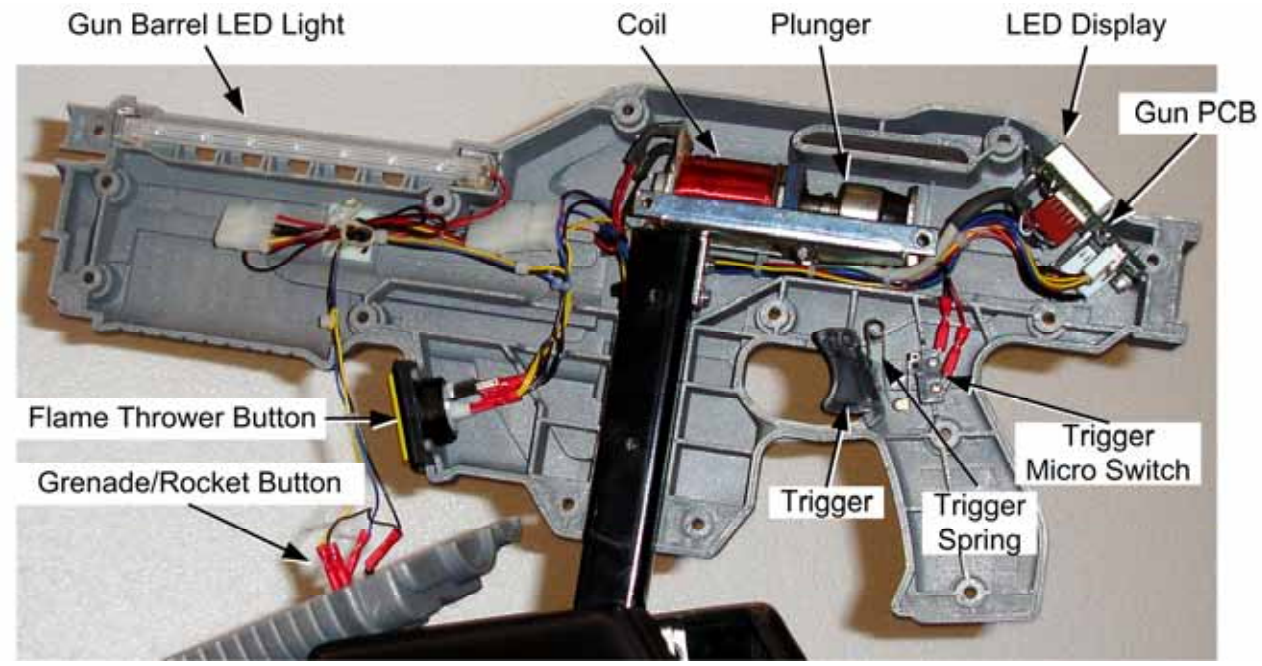

Figure 21. Gun Internal Parts

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The GVRI/O Mini PCB

The GVRI/O Mini PCB relays all signals between the system computer and the controls. Each connector on the PCB is keyed to fit only to the correct harness connector. There are several versions of the PCB. All but version 03 are approved for use with Paradise Lost.

See Figure 29 on page 46 for illustrations of the approved PCB versions and to identify the PCB connectors. Versions up to 02 have two 5 Amp fuses that protect the coin meter power only. See Figure 28 on page 45 for detailed wiring information.

The PCB must have jumpers installed at **J5** – Mode Select to put the PCB in Keyboard Mode. For PCB versions 00 and 01 place a jumper across pins 4 & 5. For all other PCB versions place a jumper at position 2 (see Figure 29).

The firmware programmed into the PCB must also be compatible with the game. The firmware version is displayed in the Operator Menu. Check http://service.globalvr.com if you need more information on PCB and firmware compatibility. Paradise Lost and Aliens® Extermination use the same firmware, so the PCBs can be swapped between these two games. PCBs used in other games are not compatible with Paradise Lost.

Caution: Disconnect the cabinet from AC power before changing the fuses or making any connections to the PCB.

Start Button Service

The Start buttons for each player are illuminated with 12-volt lamps. Refer to Figure 22 and perform the following steps to replace the buttons, lamps, and micro switches:

1. Disconnect the cabinet from AC power.
2. Open the coin door and reach up under the control panel to access the buttons.
3. To remove a micro switch, gently rock it to the side and remove it from the housing. Remove the wires and install them on the same connectors on the new micro switch.
4. To remove the lamp housing, gently rock the white plastic housing from side to side to pop it out of the button housing.
5. To remove the button from the control panel, unscrew the retaining ring from under the control panel.
6. To remove a lamp from the housing for replacement, pull it straight out of the lamp housing.
7. When connecting the wiring to the micro switch and lamp, refer to the labels on the wires and the figure below to make sure the connections are correct.

   Caution: Do not connect the 12-volt lamp power wire to the micro switch. This could damage the GVRI/O PCB.
8. Reverse these steps to install the replacement button and micro switch. Connect the ground wire to the COM connector on the bottom of the switch housing, and the signal wire to the NO connector, as shown in the figure below. **Do not** use the NC connector.

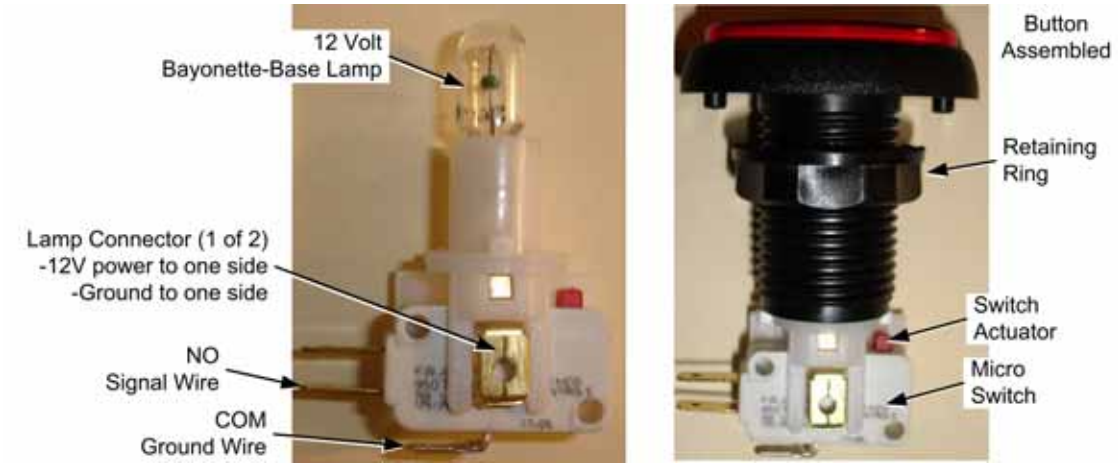

Figure 22. Start Button Assembly

LCD Monitor Service

The 42" LCD Monitor is powered by a dedicated 24 VDC power supply. This power supply plugs into the AC power strip.

If you should need to replace the LCD monitor, do the following:

1. Disconnect the cabinet from AC power.
2. Remove the four (4) screws that secure the rear cover plate to the back of the cabinet behind the LCD monitor.
3. Disconnect the power and video cables from the back of the monitor.
4. Remove the four (4) screws that secure the monitor to the cabinet.
5. Remove the seven (7) screws that secure the bezel in place around the front of the monitor.
6. Carefully lift the bezel away from the cabinet, with the glass inside the bezel frame. Be very careful as the glass is not secured in the frame.
7. Carefully lift the monitor out through the front of the cabinet.
8. Reverse these steps to install the new monitor.

Monitor Power Supply

The 24 VDC monitor power supply is located in the lower part of the cabinet. Do the following if you need to replace the power supply:

1. Disconnect the cabinet from AC power.
2. Remove the four (4) screws that secure the rear cover plate to the back of the cabinet behind the LCD monitor.
3. Make sure all wires connecting to the power supply are properly labeled for reconnection, and then disconnect them from the terminals.
4. Remove the two (2) screws that secure the power supply mounting bracket in place.
5. Reverse the removal steps to install the new power supply.

Note: If the monitor does not function properly, verify the power supply is putting out +24 VDC.

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Computer Replacement

CAUTION

The computer is serviced as one unit. YOU WILL VOID YOUR WARRANTY if you open the computer without direct authorization from the GLOBAL VR technical support staff.

Shipping the computer without enough padding can VOID THE WARRANTY if the computer is visibly damaged from shipping.

Disconnect the DVI-to-VGA adapter from the DVI port before shipping the computer. Leaving the adapter connected can cause damage to the video card.

Perform the following steps to remove the computer from the cabinet:

1. Disconnect all of the cables and the DVI-to-VGA Adapter from the computer.
2. Remove the Game Dongle and keep it with your cabinet. **Do not** ship the game dongle with the computer.
3. Note the position of the computer for re-installation. Open the buckle on the strap that secures the computer in place and carefully remove the computer from the cabinet.
4. Reverse these steps to replace the computer. Make sure that the computer air vents are not blocked. There is an air vent under the bottom front panel of the computer that is easily blocked by padding or debris.

When shipping the computer, always use plenty of padding and protection. GLOBAL VR recommends shipping the computer in a box with three inches of foam padding on all sides.

Coin Mech Replacement

Perform the following steps to remove the coin mech. You can replace the coin mech with any standard arcade coin mech.

1. Unscrew the thumbscrews on the latches as shown by the arrows in step 1 of the figure below.
2. Slide the latches apart from each other and remove the Coin Mech as shown in steps 2 and 3.
3. Reverse these steps to re-install a coin mech. It is important to verify the operation of the newly installed coin mech with both good and bad coins.

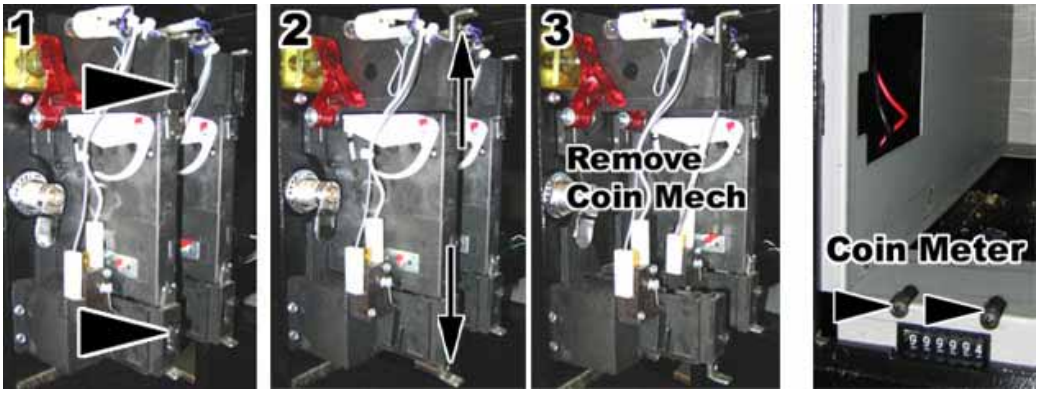

Figure 23. Servicing the Coin Mech and Coin Meter

Coin Meter Replacement

The coin meter is located in the bottom left-hand corner of the coin vault. It receives power via the GVRI/O Mini PCB. If the coin meter stops working, first check the 5A fuses on the GVRI/O Mini PCB (only on PCB versions 01 and 02) and replace if blown. Perform the following steps to replace the coin meter:

1. Turn the cabinet OFF and disconnect the AC power cord.
2. Remove the two Phillips screws securing the coin meter to the cabinet and remove the coin meter.
3. Cut the two wires from the coin meter and strip the ends of the wires to attach the new meter.
4. Use two butt splices to connect the wires to the new coin meter.
5. Secure the new coin meter with the two screws removed previously.

Power Distribution Service

AC Power Plate

The AC power plate provides the external AC power connection. An AC EMI Filter in the power plate removes electrical noise that can cause interference with the hardware inside the cabinet.

AC power from the power plate is connected to a 7-outlet AC power strip/surge suppressor in the cabinet.

Caution: The cabinet must be connected to a secure ground to function properly.

Ground wires from system components must be securely connected to the ground lug on the power plate, as shown below and in Figure 32 on page 49. Components must **not** be grounded to the power plate mounting bolts.

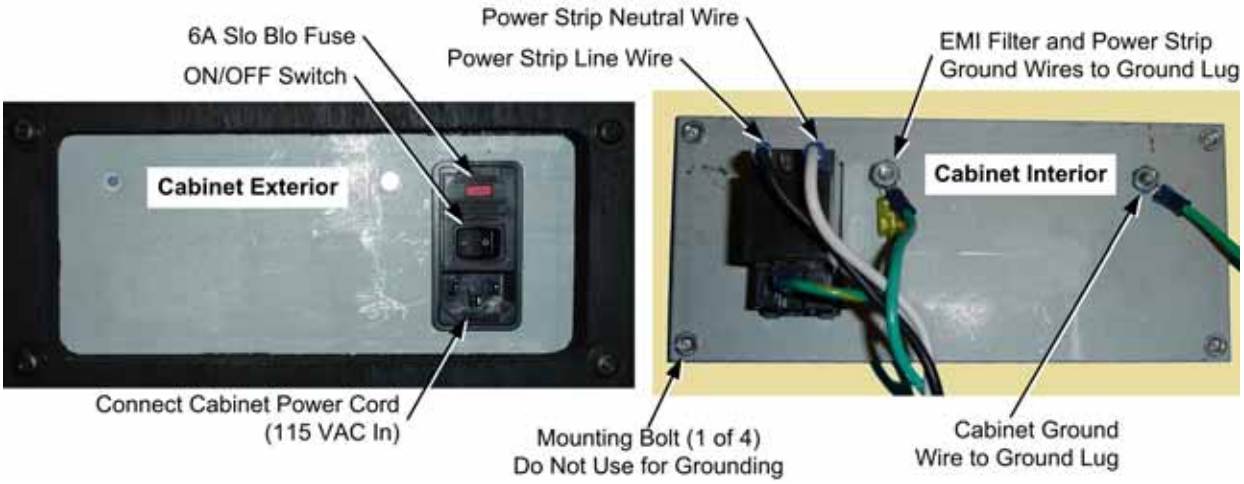
6A Slo Blo Fuse
ON/OFF Switch
Power Strip Neutral Wire
Power Strip Line Wire
EMI Filter and Power Strip Ground Wires to Ground Lug
Cabinet Exterior
Cabinet Interior
Connect Cabinet Power Cord (115 VAC In)
Mounting Bolt (1 of 4) Do Not Use for Grounding
Cabinet Ground Wire to Ground Lug

Figure 24. AC Power Plate (Shown Without Labels)

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AC Power Strip Replacement

The AC power strip provides power to all of the components in the cabinet. If the cabinet has no power, check the 6A Slo Blo fuse in the power plate (see Figure 24) and replace if blown. Perform the following steps to replace the power strip:

1. Turn the cabinet OFF and disconnect the AC power cord.
2. Disconnect all components from the power strip.
3. Disconnect the power strip from the AC power plate terminals shown in Figure 24.
4. Remove the power strip; it is held in place with Velcro®.
5. Replace the power strip with an appropriate unit from GLOBAL VR (part # 49-0963-40). Do not attempt to use a different power strip. Be sure to connect each wire to the correct terminal (See Power Distribution Diagram on page 49.)

Caution: Be sure to connect each wire to the correct terminal. The ground wire must be securely connected to the ground lug on the power plate or the game will not function properly.

DC Power Supply Replacement

The DC power supply provides +24-volt power to the gun coils, and +12-volt power to the cold-cathode lighting, ventilation fan, and GVRI/O PCB. Perform the following steps to replace the DC power supply:

1. Turn the cabinet OFF and disconnect the AC power cord.
2. Make sure that all wires connected to the DC power supply are properly labeled for easy re-assembly, and then disconnect the wires from the terminals on the DC power supply.
3. Remove the four (4) screws that secure the power supply to the cabinet.
4. Reverse these steps to install the new power supply. Adjust the +5V output to 5.4V **before** connecting the power supply to the cabinet harnesses (use 5.2V if the power supply is connected). If the voltage is too high it will damage electronic components. If it is too low, the game will not work properly.
5. Be sure to connect the wires to the correct terminals. Refer to Figure 32 on page 49 for a diagram.

Marquee Florescent Light Service

The marquee is lit by a florescent fixture. To gain access to the marquee fixture, remove the three (3) wood screws and five (5) nuts with washers from the back of the marquee, and then remove the marquee front with the artwork and clear plastic.

Replace the florescent tube with another 18" florescent tube.

To remove the fixture, disconnect the cabinet from AC power. Disconnect the AC power cord from the fixture. Remove the two Phillips screws that secure the fixture to the cabinet and remove the fixture. Replace the fixture with part # 49-1001-00.

Cold-Cathode Florescent Light Service

Cold-cathode florescent lights (CCFLs) are used for the instruction panel, and to add dramatic lighting effects to the cabinet. See Figure 25 for CCFL wiring.

Note: If both lights in a set fail, make sure the power connector is firmly attached to the power inverter. Connect the lights to another power inverter to test them. Replace the power inverter if faulty; it is held in place with Velcro and/or cable ties.

Refer to the table below if you need to replace a cold-cathode tube or inverter.

Light Location	Size & Qty	Changing Tube(s)	Inverter Location
Instruction Panel	Two 6" White Tubes	Remove the four (4) screws that secure the instruction panel in place.	Behind Instruction Panel
Kick Panel	One 12" White Tube	Remove the four (4) screws that secure the clear plastic plate above the kick panel.	Cabinet Floor
Area Below Guns	Two 6" White Tubes, One Below Each Gun	Remove the four (4) screws that secure the metal base plate below the gun.	Behind Instruction Panel
Subwoofer	One 12" Red Tube	Remove the four (4) Torx screws that secure the speaker grill to access the tubes. Remove the back door to access the inverter.	Inside Cabinet on Side Wall

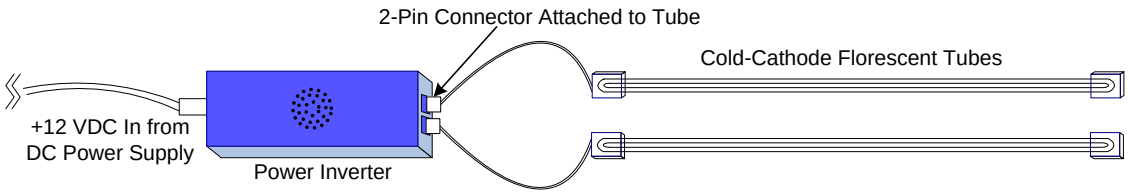

Figure 25. Cold-Cathode Light Detail

Changing the Monitor Resolution Manually

In rare cases the software may not be able to set the monitor resolution correctly, and you can not change the setting from the Operator Menu. This can happen when a video card or LCD panel is replaced. In this case, do the following steps to set the optimal resolution:

1. With Attract Mode running, connect a USB keyboard and USB mouse to the system computer.

   Note: You can use a PS2 mouse and/or keyboard but you must power off the game before connecting them.

2. Press the **Esc** key on the keyboard to exit from the game.
3. Press the Windows flag key on the keyboard to open the Windows Start Menu and select **Display Properties** from the Start Menu. The Display Properties window will open.
4. Select the **Settings** tab in the Display Properties window.
5. In the Settings tab, Click the **Advanced** button in the lower part of the window. The Plug & Play Monitor window will appear.

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6. In the Plug & Play Monitor window, select the video card tab, for example, *GeForce 7600 GS*.
7. In the video card tab, select **Start the NVIDIA Control Panel**. The NVIDIA Control Panel window will appear.

   (**Notes:** If the window is too small to use, you can click the ☐ icon in the upper right corner to enlarge it. If the **NVIDIA Control Panel View Selection** window opens, select **Advanced Settings** and click **OK**.)
8. Under **Display** in the NVIDIA Control Panel, select **Manage Custom Resolutions**.
9. Click the **Create** button. The Custom Resolutions window will appear.
10. Type the following settings in the Custom Resolutions window:

    Horizontal desktop pixels: **1280** Vertical desktop lines: **720**

    (These settings should already be entered: GDI Refresh rate: **60** Bits per pixel: **32.)**
11. Click the **Test** button, and then click **OK**.
12. If the screen looks correct, click **Yes** in the dialog box that appears. If the screen is black, wait 15 seconds for the setting to time out, and then make sure you typed in the correct values.
13. Click **OK** to close the next two windows.
14. Close the NVIDIA Control Panel by clicking the X in the upper right corner of the window.
15. In the Display Properties Settings window (opened previously) select **Change Resolution** and change the setting to **1280 by 720**.
16. Click **Apply**, and then click **Yes** in the confirmation box.
17. Close the Display Properties window by clicking the X in the upper right corner of the window.
18. Double-click the folder (there should only be one) on the Windows desktop to open it.
19. Find the **systemcfg.lua** file inside the folder and double-click the file to open it in Notepad. (If the file does not open, right-click the file, select Open With, and then select Notepad.)
20. Scroll all the way to the bottom of the page in Notepad. Locate the "r_" lines shown below and edit the values to match the text shown in bold below:

    r_Height = "**720**"

    r_ViewportHeight = "**720**"

    r_ViewportWidth = "**1280**"

    r_Width = "**1280**"
21. Select **File → Save** (or press **Ctrl +S**) to save the changes, and then close Notepad by clicking the X in the upper right corner of the window.
22. Turn the cabinet off and disconnect the keyboard and mouse.
23. Turn the cabinet on and wait for the Attract movie to start.
24. Press the Operator button to open the Operator Menu, and select **Monitor Settings**.
25. Confirm Display Width is set to **1280**, and Display Height is set to **720**.
26. Exit from the Operator Menu and play a game to verify proper operation.

BIOS (CMOS) Settings (Asus P5KPL-CM Motherboard)

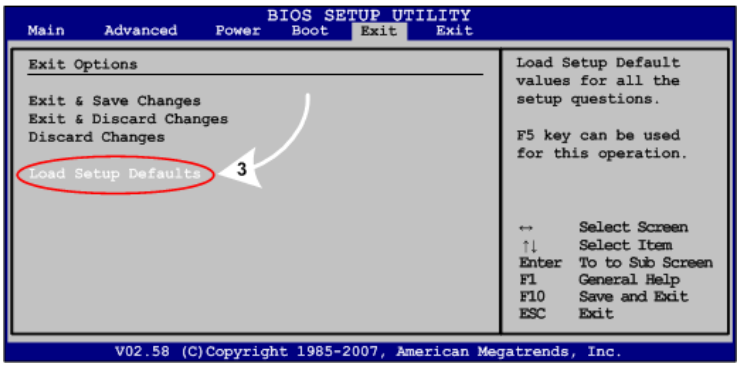
This procedure applies to the Asus **P5KPL-CM** Motherboard. If your system has a different motherboard, check http://service.globalvr.com for updated information.

If you are comfortable using the BIOS Setup Utility, connect a keyboard to the computer and press the **DEL** key during boot to run the Utility. Select **Load Setup Default** from the **Exit** Menu first, and then check all of the settings shown in the table below. For more help, refer to the detailed instructions that follow.

Menu	Submenu (if applicable)	Item	Setting
Exit		Load Setup Default	*(Not applicable)*
Main		System Time	*(Set to local time)*
		System Date	*(Set to current date)*
		Legacy Diskette A:	Disabled
		Primary IDE Master	WDC WD400BB
		Primary IDE Slave	Sony DVD-ROM
Advanced	CPU Configuration	Intel(R) SpeedStep(tm) Tech	Disabled
Boot	Boot Device Priority	1st Boot Device	DVD ROM *or* CD ROM
		2nd Boot Device	HDD
		3rd Boot Device	Disabled
	Boot Settings Configuration	Wait for F1 if Error	Disabled
Power	APM Configuration	Restore on AC Power Loss	Power On
	Hardware Monitor	CPU Q-Fan Control	Disabled *(default setting)*

Important: Your screens may not look exactly like the screens shown in this document, and some settings shown in the pictures may be different from your system.
Do not change any settings that are not specifically described in this document.

1. Power off the game and connect a keyboard to the computer. Power on and press the **DEL** key during boot. The BIOS Setup Utility will start:
2. Use the Arrow keys (← →) to highlight **Exit** from the top of the screen, and the **Exit** menu will appear.
3. Use the Arrow keys (↑↓) to select **Load Setup Defaults**, and press **Enter**.
4. A prompt will appear saying **Load Setup Defaults (Y/N)?** Make sure **YES** is highlighted and press **Enter** to confirm the change.



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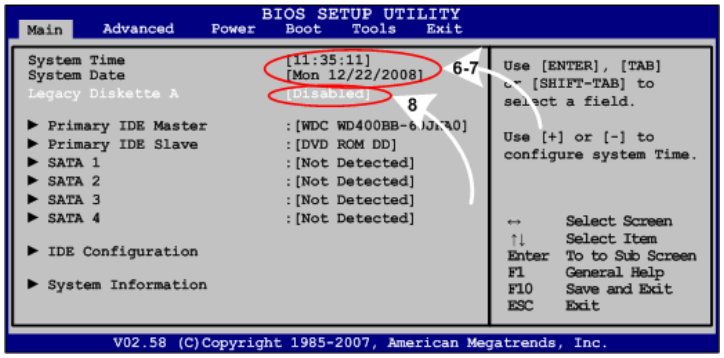
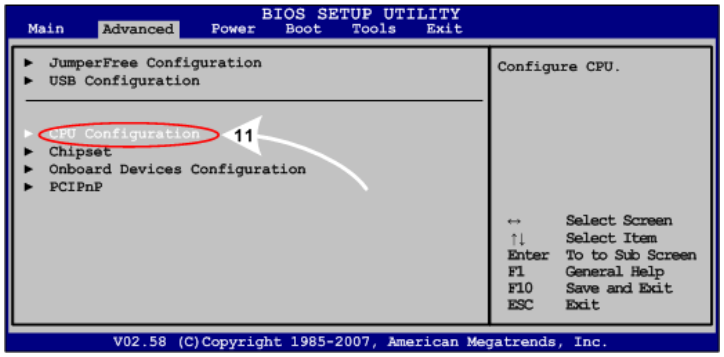
5. Use the Arrow keys (← →) to highlight **Main** from the top of the screen, and the **Main** Menu will appear.
6. Use the Arrow keys (↑↓) to highlight **System Time**. The hour will be highlighted. Use the + and – keys to set the hour to local time. Press **Tab** to move to the minutes, and set them the same way.

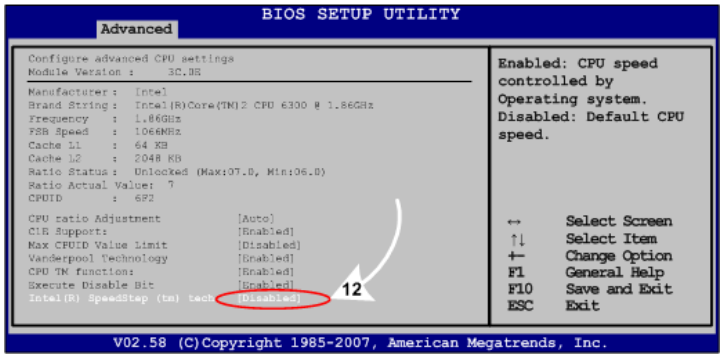


7. Use the Arrow keys (↑↓) to highlight **System Date** and set it the same way you set the time.
8. Use the Arrow keys (↑↓) to highlight **Legacy Diskette A:** and then use the + and – keys to change the setting to **Disabled**.
9. Verify **Primary IDE Master** is the hard disk (WDC WD400BB) and **Primary IDE Slave** is the Sony DVD-ROM.
10. Use the Arrow keys (← →) to highlight **Advanced** from the top of the screen, and the **Advanced** menu will appear.
11. Use the Arrow keys to highlight **CPU Configuration** and press **Enter**.

    The **Configure Advanced CPU Settings** menu will appear.

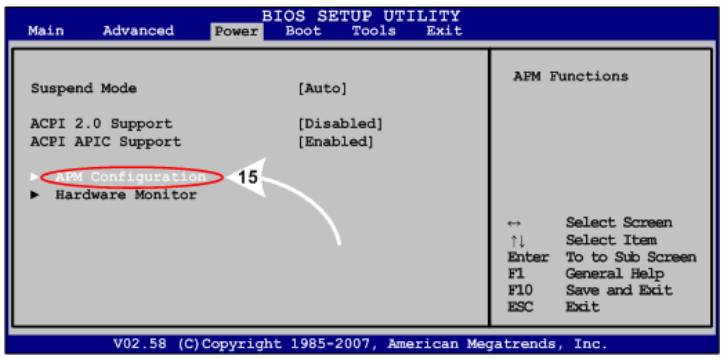


12. Use the Arrow keys (↑↓) to highlight **Intel(R) SpeedStep (tm) tech.** and then use the + and – keys to change the setting to **Disabled**.
13. Press **Esc** to return to the **Advanced** menu.


BIOS SETUP UTILITY
Advanced
Configure advanced CPU settings
Module Version : 3C.3E
Manufacturer : Intel
Brand String : Intel(R)Core(TM)2 CPU 6300 @ 1.86GHz
Frequency : 1.86GHz
FSB Speed : 1066MHz
Cache L1 : 64 KB
Cache L2 : 2048 KB
Ratio Status : Unlocked (Max:07.0, Min:06.0)
Ratio Actual Value: 7
CPUID : 6F2
CPU ratio Adjustment [Auto]
C1R Support: [Enabled]
Max CPUID Value Limit [Disabled]
Vanderpool Technology [Enabled]
CPU TM function: [Enabled]
Execute Disable Bit [Enabled]
Intel(R) SpeedStep (tm) tech [Disabled]
12
Enabled: CPU speed controlled by Operating system. Disabled: Default CPU speed.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
V02.58 (C)Copyright 1985-2007, American Megatrends, Inc.

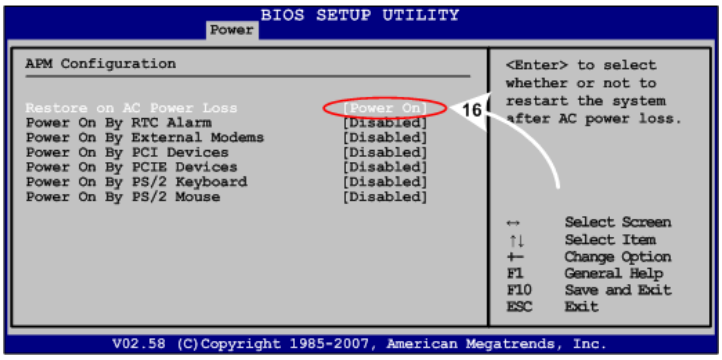
14. Use the Arrow keys (← →) to highlight **Power** from the top of the screen, and the **Power** menu will appear.
15. Use the Arrow keys to highlight **APM Configuration** and press **Enter**.

    The **APM Configuration** menu will appear.



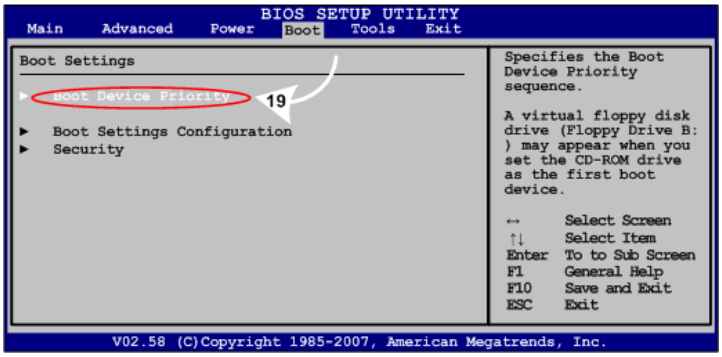
16. Use the Arrow keys (↑↓) to highlight **Restore on AC Power Loss** and then use the + and – keys to change the setting to **Power-On**.
17. Press **Esc** to return to the **Power** menu.

    Note: It is also recommended to select **Hardware Monitor** from the Power menu and verify **CPU Q-Fan Control** is set to **Disabled**.


BIOS SETUP UTILITY
Power
APM Configuration
Restore on AC Power Loss [Power On]
Power On By RTC Alarm [Disabled]
Power On By External Modems [Disabled]
Power On By PCI Devices [Disabled]
Power On By PCIE Devices [Disabled]
Power On By PS/2 Keyboard [Disabled]
Power On By PS/2 Mouse [Disabled]
16
<Enter> to select whether or not to restart the system after AC power loss.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
V02.58 (C)Copyright 1985-2007, American Megatrends, Inc.

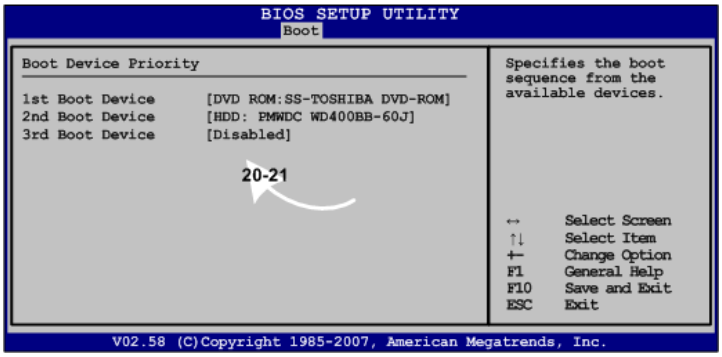
18. Use the Arrow keys (← →) to highlight **Boot** from the top of the screen, and the **Boot** menu will appear.
19. Use the Arrow keys (↑↓) to highlight **Boot Device Priority** and press **Enter**.

    The **Boot Device Priority** menu will appear.

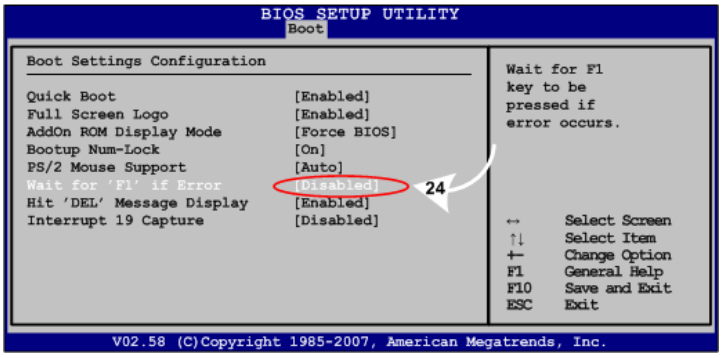

BIOS SETUP UTILITY
Main Advanced Power Boot Tools Exit
Boot Settings
Boot Device Priority
19
Boot Settings Configuration
Security
Specifies the Boot Device Priority sequence.
A virtual floppy disk drive (Floppy Drive B:) may appear when you set the CD-ROM drive as the first boot device.
↔ Select Screen
↑↓ Select Item
Enter To to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
V02.58 (C)Copyright 1985-2007, American Megatrends, Inc.

20. Use the Arrow keys (↑↓) to highlight **1st Boot Device**, and then use the + and – keys to change the setting to **DVD ROM**.
21. Do the same step to change **2nd Boot Device** to **HDD**, and **3rd Boot Device** to Disabled, as necessary.
22. Press **Esc** to return to the **Boot** menu.
23. Use the Arrow keys (↑↓) to highlight **Boot Settings Configuration** and press **Enter**.

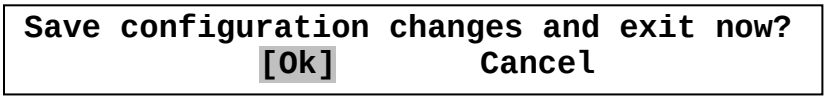
    The Boot Settings Configuration menu will appear



24. Use the Arrow keys (↑↓) to highlight **Wait for F1 if Error** and then use the + and – keys to change the setting to **Disabled**.



25. Now that all settings are correct, press F10. The following prompt will appear:



26. Make sure **Ok** is highlighted (use the arrow keys ← → to select, if necessary), and press **Enter** to save the settings and reboot the computer.

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Chapter 7 — Replacement Parts

If you need replacement parts, please reference these part numbers when contacting GLOBAL VR technical support or your distributor.

Documents and Software

Part Number	Qty	Item Description
040-0204-01	1	Operation & Service Manual (This Document)
040-0149-02	1	Software Restore Guide
050-0170-01*	1	System Recovery CD
050-0127-01*	1	Game Install DVD

*Part numbers may change due to software revisions.

Cables

Part Number	Qty	Item Description
115-0008-01	1	Power Cord for DC Power Supply
115-0049-01	1	Power Plate ground cable, 3.5"
115-0095-01	1	Coin Door Harness
115-0096-01	1	Start Button Harness
115-0097-01	2	Gun Power Cable with Fuses
115-0098-01	1	12V Lights Power Cable
115-0099-01	1	Ground wire, Gun to Coin Vault
115-0113-01	1	Load resistor and cable assembly
115-0119-01	2	Speaker Harness (Audio Harness to Left and Right Speakers)
115-0120-01	1	Audio Harness
115-0121-01	1	AC Power Cord for Monitor Power Supply
115-0122-01	1	Power Harness for Cold-Cathode Lights
115-0168-01	1	Transformer harness assembly
115-DVINPUT-CBL	1	Digital Video Cable
80-0213-00	1	Cabinet Power Cord, 6'
96-0539-00	1	Stereo Cable, 3.5mm, 6'
GLO-PWRCORD	1	Florescent Light Power Cord
USB-AB06MM	1	USB Cable, 6'
USB-EXT-6	2	USB Extension Cable, 6', USB 2.0, A Plug/A Jack

Cabinet Functional Components

Part Number	Qty	Item Description
WGM2794-U0FS53R	1	Monitor, Wells-Gardner 27" Flat Screen
990-0013-01	1	GVRI/O Mini PCB
990-0001-01	1	5.1 Audio Amp
50-9986-00	1	Externally-Mounted Speakers, Pair, 3-Way 50 W
5555-15142-00	1	8" Subwoofer

Part Number	Qty	Item Description
EI-420W02-001-AOD	1	42" LCD Monitor Assembly
137657	1	24 VDC, 10 Amp Power Supply for LCD Monitor
Q-250D	1	DC Power Supply, 250W, 5/12/24VDC
CCFL2R	1	Cold Cathode Light Kit, Dual 12" Red (Subwoofer Lighting)
CCFL2W	1	Cold Cathode Light Kit, Dual 12", White (Kick Panel Lighting)
CCFL62W	2	Cold Cathode Light Kit, Dual 6", White (Instruction Panel & Under Control Panel)
CCM1600-ND	1	Power Entry Module with EMI Filter, Power Plate
37117-01	1	Power Plate
49-0963-40	1	7-Outlet Power Strip, Surge Protector, 15 Amps, 1500 Joules
49-1001-00	1	Florescent Light Fixture, 18"
59-6582-8222232	1	Start Button, Blue
59-6582-8332233	1	Start Button, Green
60039-00	1	Computer Mounting Strap
12V-FAN-QCA	1	12 VDC Cabinet Fan, with Power Cord
45070-00	1	System Computer Assembly
USB-KQRTG-HL-PL	1	USB Game Dongle

Gun Parts

Also see pages 38 and 39.

Part Number	Qty per Gun	Item Description
26090-01	1	Gun Housing, Left
26090-02	1	Gun Housing, Right
96-0799-00	1	Gun Assembly
METL6R	1	LED Light Tube, Red
990-0012-01	1	Gun PCB

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Gun Exploded-View Parts

Ref #	Qty	Part Number	Item Description
1	1	96-4901-00	BOTTOM PLATE F/WMS ANALOG GUN
2	1	96-4937-00	BRACKET F/SWIVEL BASE ASSY.
3	1	96-4934-00	BRACKET PIVOT BOX & SHAFT ASSY.
4	1	96-4902-00	BRACKET HANDLE WELDED
5	1	96-4915-00	BRKT COIL MTG
6	1	96-4923-00	SHAFT 5/8 DIA.
7	1	96-4908-00	DISC PLASTIC WASHER
8	1	96-4907-00	GEAR SEGMENT W/HUB
9	1	96-4960-00	SPACER SEGMENT GEAR
10	1	43-0232-00	NUT, HEX NYLOCK 1/2-20
11	1	43-0055-00	WASHER, FLAT 1/2 SAE
12	7	42-0082-00	NUT, KEPS 8-32
13	8	43-0252-00	SCREW, #8-32 x 3/8 HEX HEAD
14	1	43-0003-00	3/8 SAE FLAT WASHER ZNC PLTD
15	1	43-0092-00	NUT 3/8-16 NYLOCK
16	1	43-0280-00	HEX HEAD CAP SCREW 10-32 X 1-1/4
17	2	43-0037-00	LOCKWASHER, EXT #10
18	3	43-0253-00	NUT HEX 10-32 JAM NYLOCK ZINC PLATED
19	1	96-4900-00	COIL RETAINING BRACKET
20	1	96-4938-00	INSULATOR
21	1	96-4904-00	BRACKET POT MTG HORIZONTAL
22	1	96-4913-00	BRKT POT MTG VERTICAL
23	1	96-4936-00	PLUNGER F/SOLENOID
24	1	96-4931-00	SPRING COMPRESSION
25	1	96-4971-00	BUMPER SOLENOID STOP
26	1	96-4921-00	GEAR SEGMENT HUBLESS
27	2	43-6972-00	SPACER F/BUMPER
28	1	43-0188-00	SCREW, #8-32 x 3/8" HEX WASHER HD
29	2	43-0254-00	SCREW 10-32 X 2.25 HEX HD ZINC
30	4	96-4920-00	BEARING .625 BORE
31	2	96-4917-00	GEAR 32DP 16T .25" BORE .5" L.
32	1	96-4970-00	REAR BUMPER PAD
33	1	96-4911-00	BUMPER 3/4 DIA.
34	2	96-4919-00	BUMPER 5/8 DIA. VERTICAL
35	1	96-4935-00	COIL WITH TUBING
36	2	96-4973-00	PAD ADHESIVE FOAM TAPE
37	2	96-4916-00	LONG LIFE POT W/NUT & WSHR 5K
38	1	43-0223-00	E-RING 3/8 DIA SHAFT
39	1	FI-0229-GVR	ALIEN GUN HALF LEFT FI FROM GVR
40	1	FI-0230-GVR	ALIEN GUN HALF RIGHT FI FROM GVR
41	1	95-4142-00	SWITCH ASSY BALL DETECT
42	1	54V-0004-20	IPB SM CIR RED RED CAP 14V73 VLT LAMP ASSY
43	1	96-2515-06	TRIGGER BLACK NEW STYLE
44	1	96-0005-00	SPRING, TRIGGER RETURN
45	1	57-2000-50	VLT BUTTON REC,RED W/6V LAMP
46	11	4008-01100-16	SCREW 8-32 X 1" BH TORX
47	8	43-1130-00	SCREW 10-32 X 3/8" BUTTON HD TORX T-P
48	14	43-0211-00	NUT, 8-32 NYLOK
49	1	43-2318-00	SCREW 8-32 X 5/8 BHMS TORX
50	2	43-2317-00	SCREW 8-32 X 7/8 BHMS TORX
51	2	43-0172 00	SCREW, #2 X 1/2 TYPE B. PPH

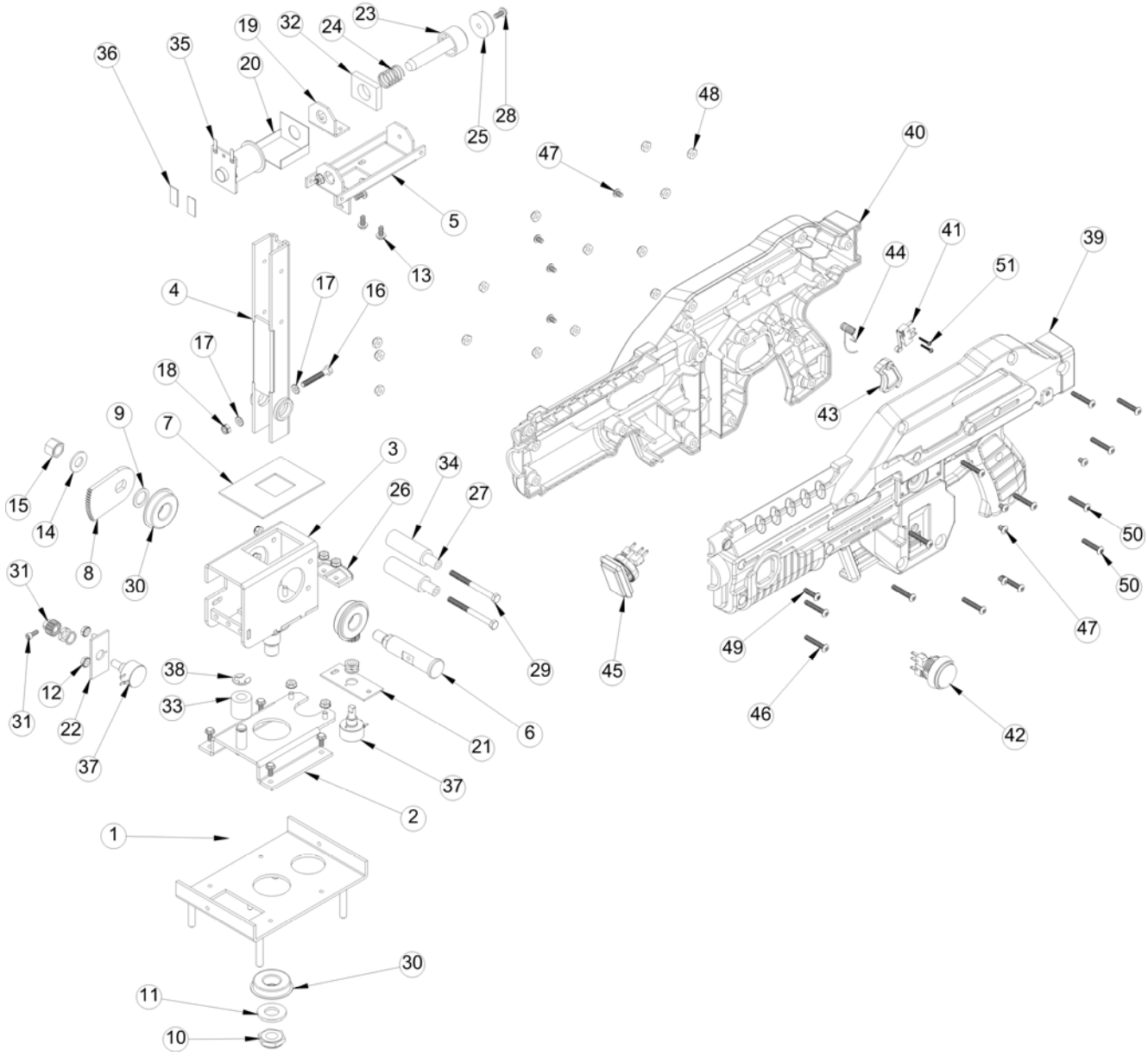

Figure 26. Gun Exploded-View Drawing

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Cabinet Artwork

Figure 27. Cabinet Artwork

Chapter 8 — Troubleshooting

Video Troubleshooting

Problem	Cause	Possible Solution
No picture or Corrupted picture on monitor	Power problem	Check the monitor power cord and power strip.
	Loose or faulty video cable	Verify that the video cable is firmly connected from the monitor to the video card in the computer. While the monitor is powered ON, disconnect the video cable. You should briefly see a message on-screen saying *No Signal* if the monitor is working. Check the video cable and make sure it is not pinched or frayed. Connect the cable to a different monitor to verify the signal.
	Loose or faulty video card	When the computer boots up, it performs a PC self-diagnostic test. If you hear 3 beeps from the computer, this indicates a problem with the video card. If the video card is faulty, contact Technical Support. If instructed by Technical Support, open the computer and check the following: • Make sure the video card is seated properly in the motherboard. Reseat the video card. • Check the power connector to the video card inside the computer. Make sure it is connected properly and is not connected backwards. • Power on the computer and make sure the fan on the video card is spinning fast.
No video and no audio (**Note:** It may take nearly 2 minutes to boot and start the game)	No power to computer	Verify the computer is ON by the LED on the front of the computer. Verify the line voltage switch on the back of the computer is set to the correct voltage for your area, 115V or 230V. Make sure the AC power cord is firmly connected to the computer and the power strip, and the power strip LED is on. Turn off the power strip, wait 20 seconds, and then turn it back on to reboot the computer. If the computer does not power on, make sure the On/Off switch on the back of the computer is in the On (I) position and *After Power Failure* in the BIOS is set to *Power On* (see page **Error! Bookmark not defined.**).
	Corrupted software	Reload the software from the disks. If you continue to have problems, you may have a faulty hard drive.
	Faulty hard drive	If you continue to have problems after you reload the software, you may have a faulty hard drive. Contact Technical Support.
Video image size is too big for screen	Wrong dongle version	Check Cabinet Info in Operator Menu. You should see **CAB: Standard**. If you see **CAB: Deluxe**, you have the wrong game dongle. Contact Tech Support.
Monitor resolution is wrong	You may need to set resolution manually	See page 31 for instructions for setting the monitor resolution manually.
Picture is dim or faded	Video output needs adjustment	Adjust the brightness, contrast, and gamma setting from **Monitor Settings** in the Operator Menu.

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Problem	Cause	Possible Solution
Picture color is poor	Color needs adjustment	Use the monitor remote control to adjust the red, green, and blue color settings. Use the Test Screens in **Monitor Settings** in the Operator Menu to aid with color adjustments.
Picture geometry is misaligned	Geometry needs adjustment	Use the monitor remote control to adjust the picture height and width, and other geometry. Use the Test Screens from **Monitor Settings** in the Operator Menu to aid with adjustments.

Audio Troubleshooting

Problem	Cause	Possible Solution
No audio or Poor sound from one or more speakers	Volume set too low	Use the **VOL UP** button on the Operator Button Panel to raise the volume.
	Faulty wiring	Verify that all the wires are firmly connected to the speakers, Audio Amp PCB, and **green** computer audio port. Verify that no wires are frayed or improperly shorting to ground.
	Blown speakers	Remove the grill and inspect each speaker for visible damage. Run the **Speaker Test** from the Operator Menu to verify each speaker is working.
	Reversed wires	A weak or low muffled sound is a sign of reversed speaker wires. Check for reversed wires on each affected speaker.
	Faulty Audio Amp	To verify audio is working at the computer, connect stereo headphones to the computer audio port.
Audio hum	Faulty power supply	A constant low hum in the speakers can be caused by a faulty power supply. This could be either an external DC power supply or the computer power supply.
	Open ground	Check all ground wires in the cabinet. Make sure the AC wall outlet is properly grounded.

Gun Troubleshooting

Caution: Disconnect the cabinet AC power cord before disconnecting or connecting **any** gun cables. Failure to do so may damage the gun PCB.

Problem	Cause	Possible Solution
No force-feedback recoil in gun	Faulty DC power supply	Make sure the DC power supply is putting out +24 VDC.
	Kicker turned off	Turn on the Gun Force Feedback under Game Settings in the Operator Menu.
	Faulty coil	Check wiring inside gun. Replace coil if faulty.
Force-Feedback recoil and LED flash in the wrong gun	Gun wiring is reversed	To compensate, change the Swap Guns setting under Game Settings in the Operator Menu.
A button or trigger does not work	Faulty micro switch or wiring	Check micro switch inside gun. Check wiring. Make sure no wires are pinched in the gun case.
A button or trigger does not work	Faulty micro switch or wiring	Check micro switch inside gun. Check wiring. Make sure no wires are pinched in the gun case.

Problem	Cause	Possible Solution
Gun(s) not working or Message at boot indicates gun(s) not detected	Faulty wiring	Verify that all wires are firmly connected and no wires are frayed or improperly shorting to ground.
	Disconnected USB or DC power	Check all power and USB connections. If all gun lights are off, this indicates a problem with +12 VDC power.
	Blown fuse in gun power harness	Check the fuses (MDL 2A Slo Blo) in the gun power harness.
	Gun(s) connected to faulty USB port	To test a USB port, turn off the game, disconnect the device from the port, and then connect the game dongle to the port. Reboot the game. A *No Dongle* message indicates the port is bad. If the game starts, the port is working. After the test, turn off the cabinet, reconnect all devices to the correct USB ports, and reboot. See Figure 33 on page 50 for PC connection information. **Important:** Disconnect power before changing any USB connections.
	Faulty power supply	Verify DC power supply is putting out the correct voltages.
Gun does not aim properly	Gun out of Calibration	Calibrate the gun from the Controller Test screen in the Operator Menu.
	Faulty pot or gear	Check gun pots and gears (see *Gun Pot and* Gear Service on page 24).
No lights on gun	Check +12 VDC power	Check wiring and make sure the DC power supply is putting out +12 VDC
Fuses blow	Pinched wires	Make sure no wires are pinched by the gun case.
	Faulty power supply	Test voltage output and replace power supply if faulty.
LED readout on gun not working or looks strange	Faulty Gun PCB	Check all connections to the Gun PCB (it is powered by +5 VDC from the USB connection). Replace PCB if faulty.

Miscellaneous Troubleshooting

Problem	Cause	Possible Solution
No power	Power strip not plugged in or turned off	Make sure the power indicator light on the power strip is on. If it is off, make sure the connections to the AC Power Plate are secure and the power strip ON/OFF switch is ON.
	Cabinet not connected or turned off	Make sure the AC power cord is firmly connected to the power plate and an active AC outlet, and the cabinet ON/OFF switch is ON.
	Blown fuse in power plate	Check the fuse in the power entry module in the power plate.
Computer will not boot	Power cycling the PC only, instead of cabinet, can cause the PC to not power up	Sometimes, if you power cycle the PC but not the cabinet, the PC will not power up. To fix this, power OFF the cabinet, disconnect the guns and GVRI/O PCB from the USB ports, and then power ON the cabinet. Once the computer reboots and you see the error screen saying devices are missing, power OFF the cabinet. Reconnect the USB devices and power ON the cabinet. **Note:** It is better to always reboot the cabinet rather than just the PC. Power OFF before you connect or disconnect USB devices or you will damage the gun PCB.

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Problem	Cause	Possible Solution
Game dongle not found by system computer	Game dongle not connected	Connect the game dongle. Power the cabinet off and then on.
	Faulty game dongle or wrong dongle version	Make sure the dongle is connected properly. (USB dongles illuminate when recognized by the computer.) Contact Tech Support if you need to order a new dongle.
	Faulty port	Test the dongle in a different USB port.
Cabinet gets very warm	Faulty ventilation fan	Verify that the ventilation fan is working. Replace a fan if it is worn or spinning slowly. Make sure the fan is getting +12 VDC from the DC power supply.
	Cabinet ventilation holes are blocked	Make sure you have proper clearance between the cabinet rear and the wall. Make sure the vent holes are clear of dust and debris and that air can flow freely.
Marquee lamp does not light or is intermittent	Faulty florescent tube	Check the florescent tube for darkened or cracked ends. Replace the florescent tube if it looks worn.
	Faulty florescent fixture	Verify the florescent tube pins make a good connection with the lamp fixture. Check the ballast for proper operation. Replace fixture if faulty.
Credits only work on left player (Player 1)	Wrong dongle version	Check Cabinet Info in Operator Menu. You should see **CAB: Standard**. If you see **CAB: Deluxe**, you have a Deluxe Cabinet game dongle, which requires a second coin mech for Player 2. Contact Tech Support.
Wrong number of credits given when coins or bills are inserted	Incorrect setting in Operator Menu	Adjust settings from **Game Settings** in the Operator Menu.
	Faulty wiring	Disconnect the cabinet from AC power. Verify that all wires are firmly connected to the coin mech and bill validator, and ground wires are properly connected. Verify that no wires are frayed or improperly shorting to ground.
	Faulty coin mech	Verify the coin mech is not jammed. Make sure the coin mech is properly aligned and latched to the coin door. Repair or replace if faulty.
Coin meter does not work	Blown fuse(s) on GVRI/O Mini PCB	Replace the 5 Amp fuse(s) on the GVRI/O Mini PCB (only used on PCB versions 01 and 02).

Chapter 9 — Diagrams and Schematics

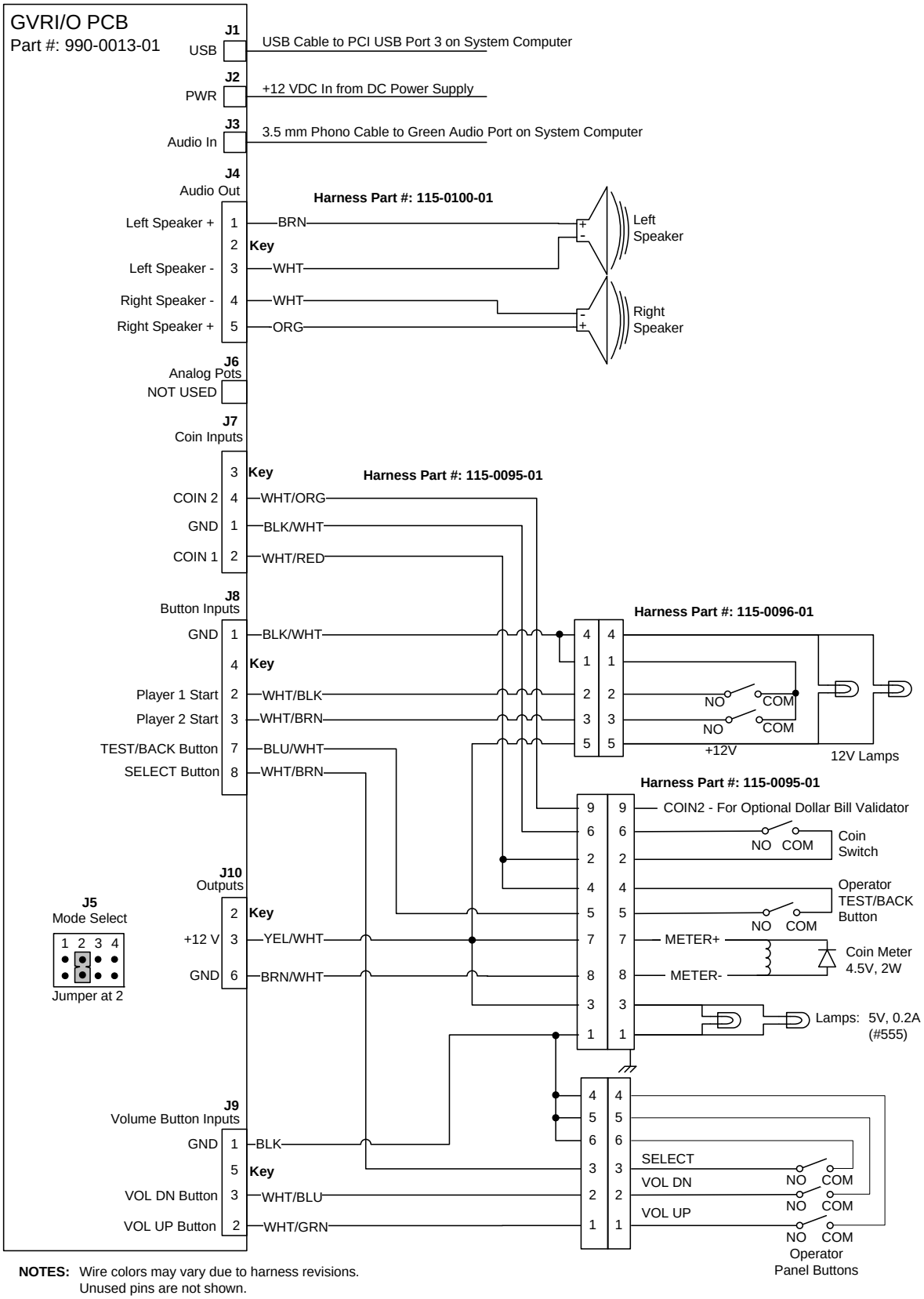

Figure 28. GVRI/O Wiring Diagram

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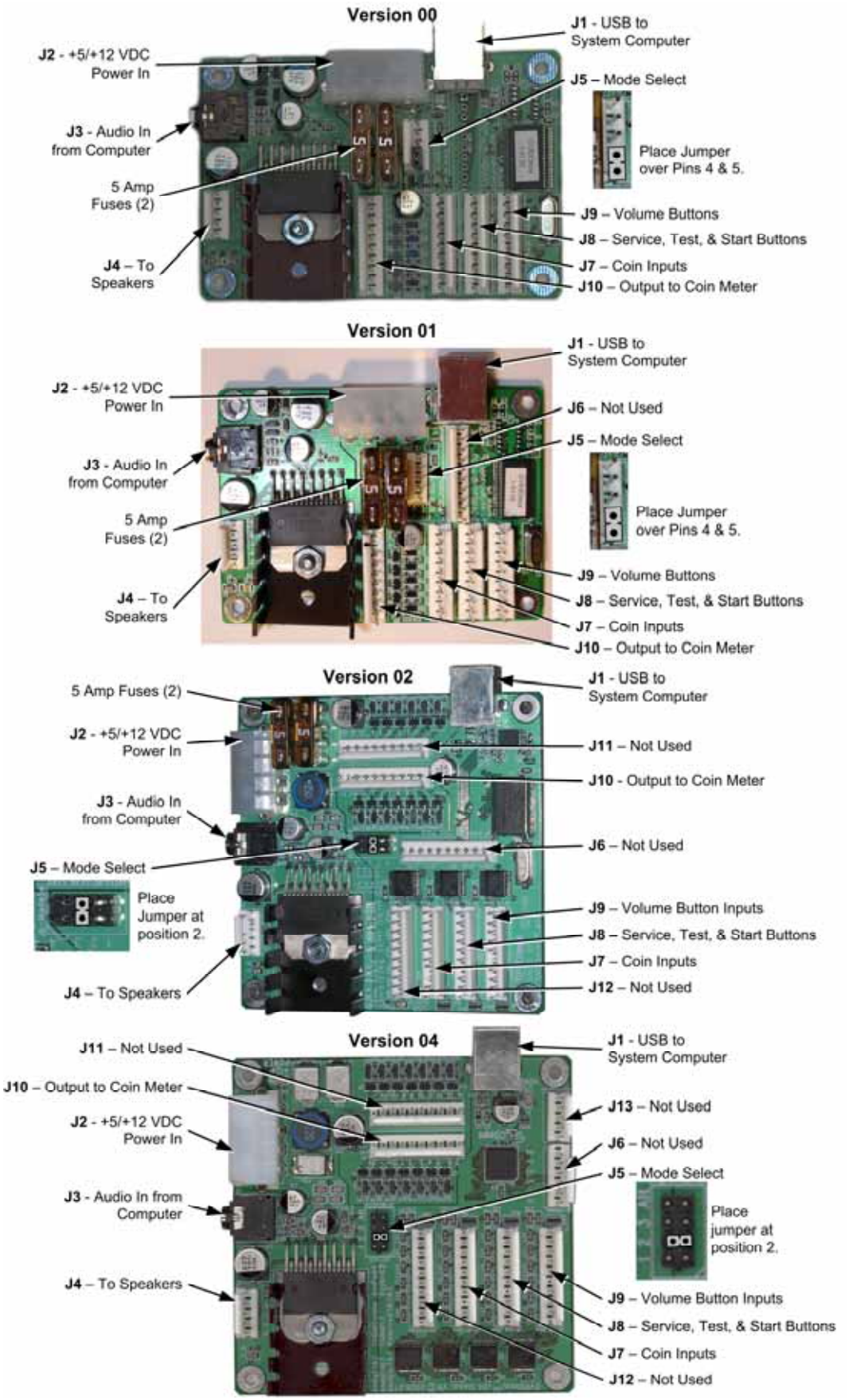
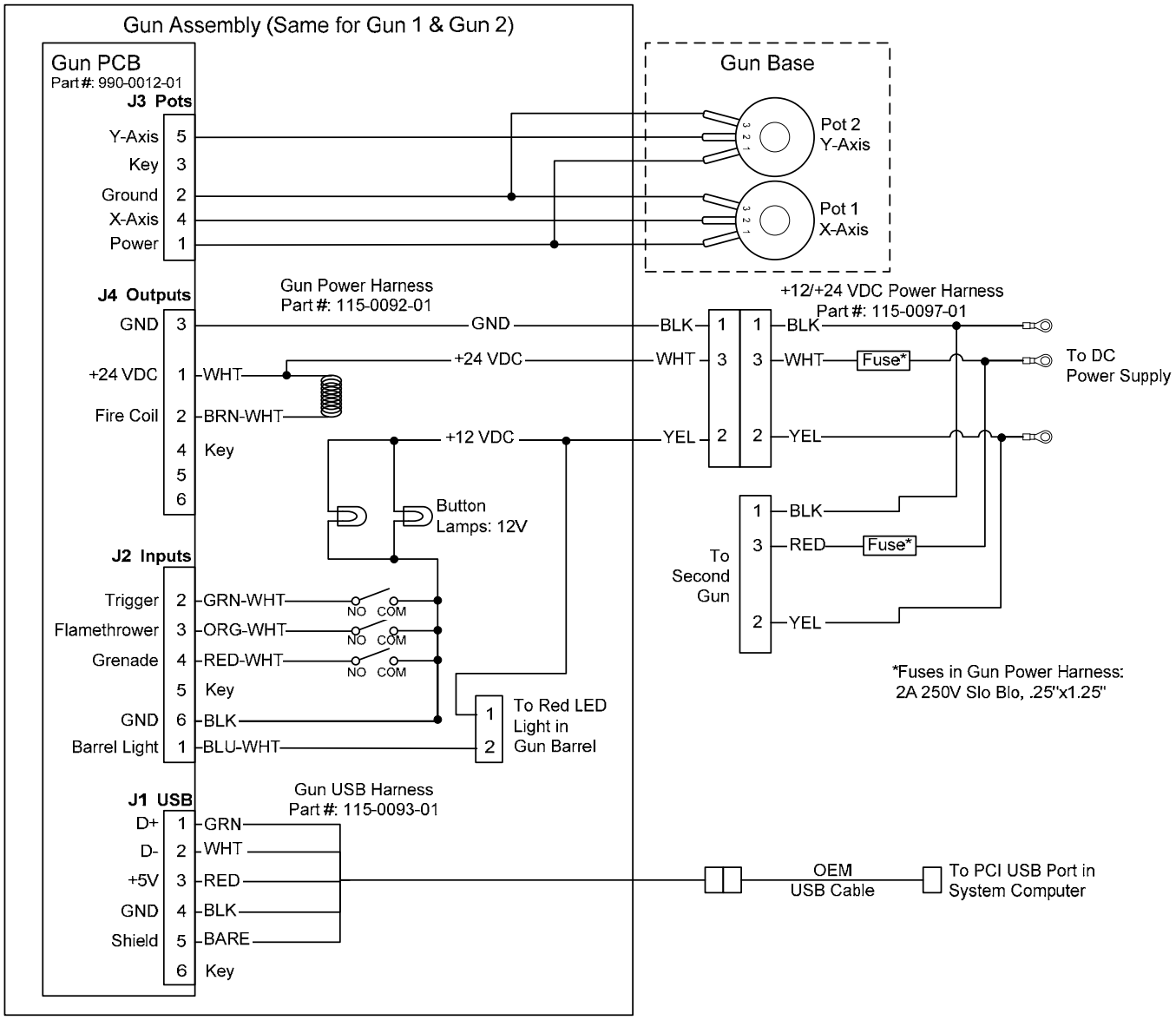

Version 00
J1 - USB to System Computer
J2 - +5/+12 VDC Power In
J5 – Mode Select
J3 - Audio In from Computer
Place Jumper over Pins 4 & 5.
5 Amp Fuses (2)
J9 – Volume Buttons
J8 – Service, Test, & Start Buttons
J4 – To Speakers
J7 – Coin Inputs
J10 – Output to Coin Meter
Version 01
J1 - USB to System Computer
J2 - +5/+12 VDC Power In
J6 – Not Used
J5 – Mode Select
J3 - Audio In from Computer
Place Jumper over Pins 4 & 5.
5 Amp Fuses (2)
J9 – Volume Buttons
J8 – Service, Test, & Start Buttons
J4 – To Speakers
J7 – Coin Inputs
J10 – Output to Coin Meter
Version 02
5 Amp Fuses (2)
J1 - USB to System Computer
J2 - +5/+12 VDC Power In
J11 – Not Used
J10 - Output to Coin Meter
J3 - Audio In from Computer
J6 – Not Used
J5 – Mode Select
Place Jumper at position 2.
J9 – Volume Button Inputs
J8 – Service, Test, & Start Buttons
J7 – Coin Inputs
J4 – To Speakers
J12 – Not Used
Version 04
J11 – Not Used
J1 - USB to System Computer
J10 – Output to Coin Meter
J13 – Not Used
J2 - +5/+12 VDC Power In
J6 – Not Used
J5 – Mode Select
J3 - Audio In from Computer
Place jumper at position 2.
J4 – To Speakers
J9 – Volume Button Inputs
J8 – Service, Test, & Start Buttons
J7 – Coin Inputs
J12 – Not Used

Figure 29. Four Versions of GVRI/O Mini PCB



NOTE: Wire colors may vary due to harness revisions.

Caution: Disconnect power before changing any USB connections or you will damage the PCBs.

Figure 30. Gun Wiring Diagram

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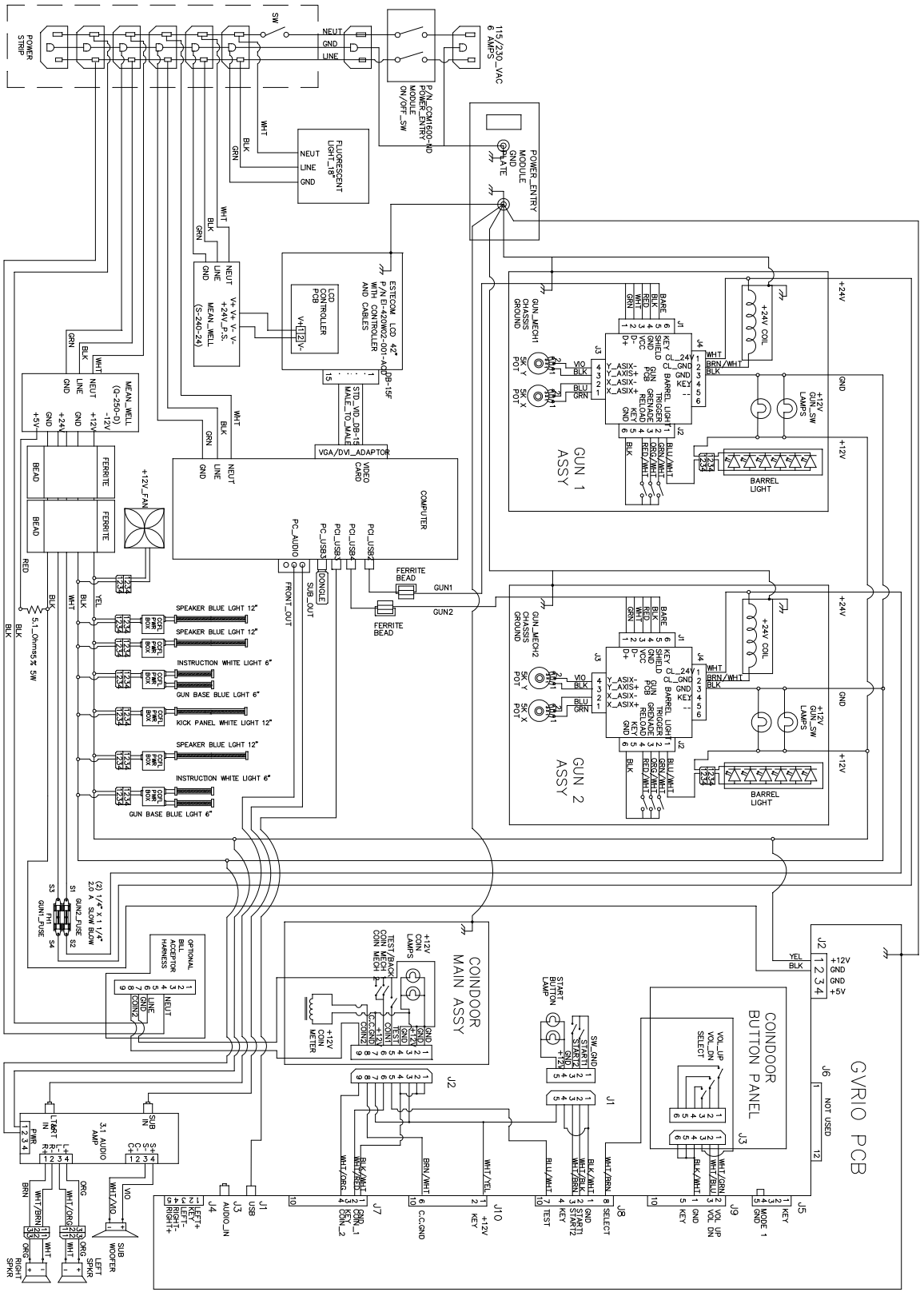

Figure 31. Overall Cabinet Wiring Diagram

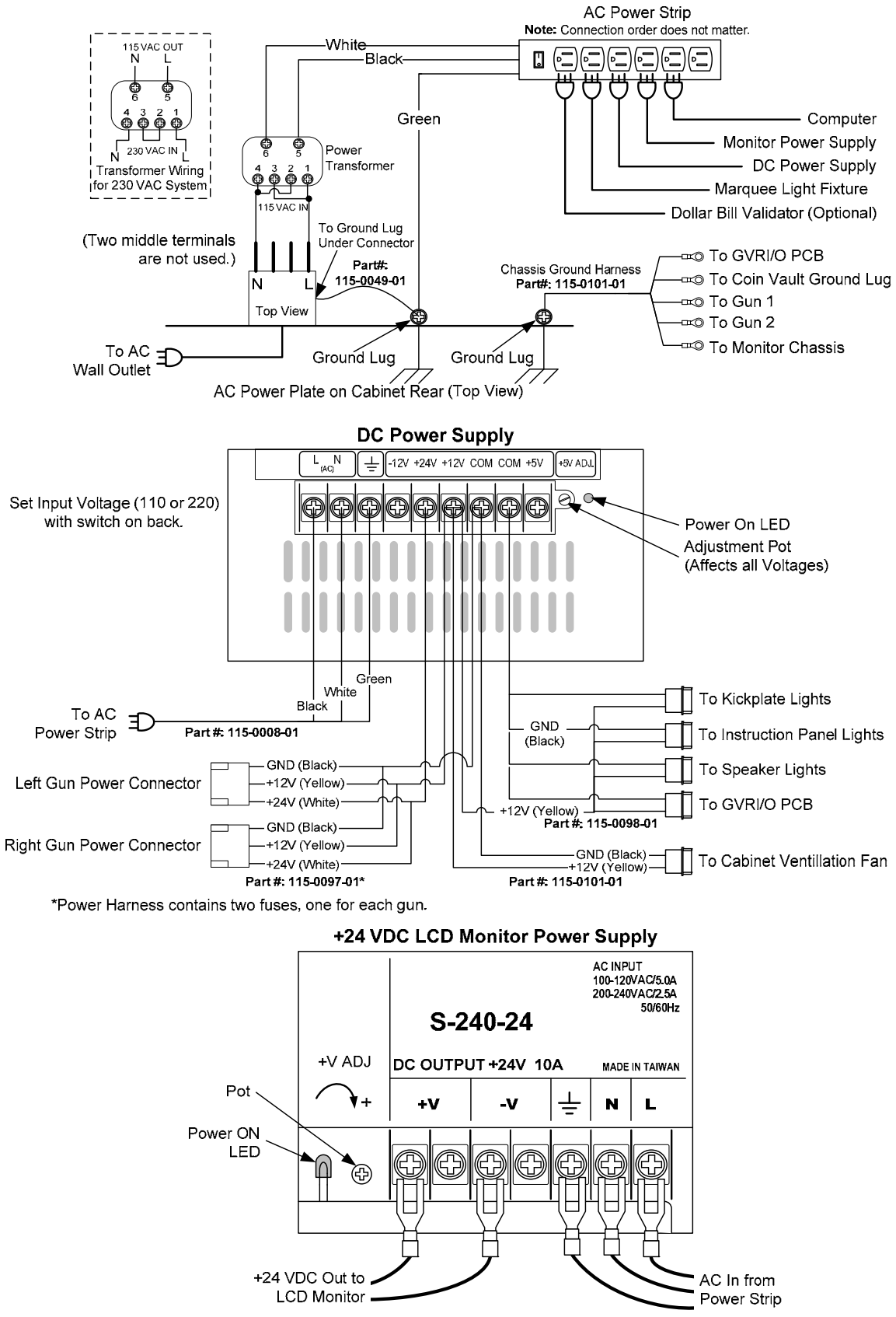

Figure 32. Power Distribution Diagram

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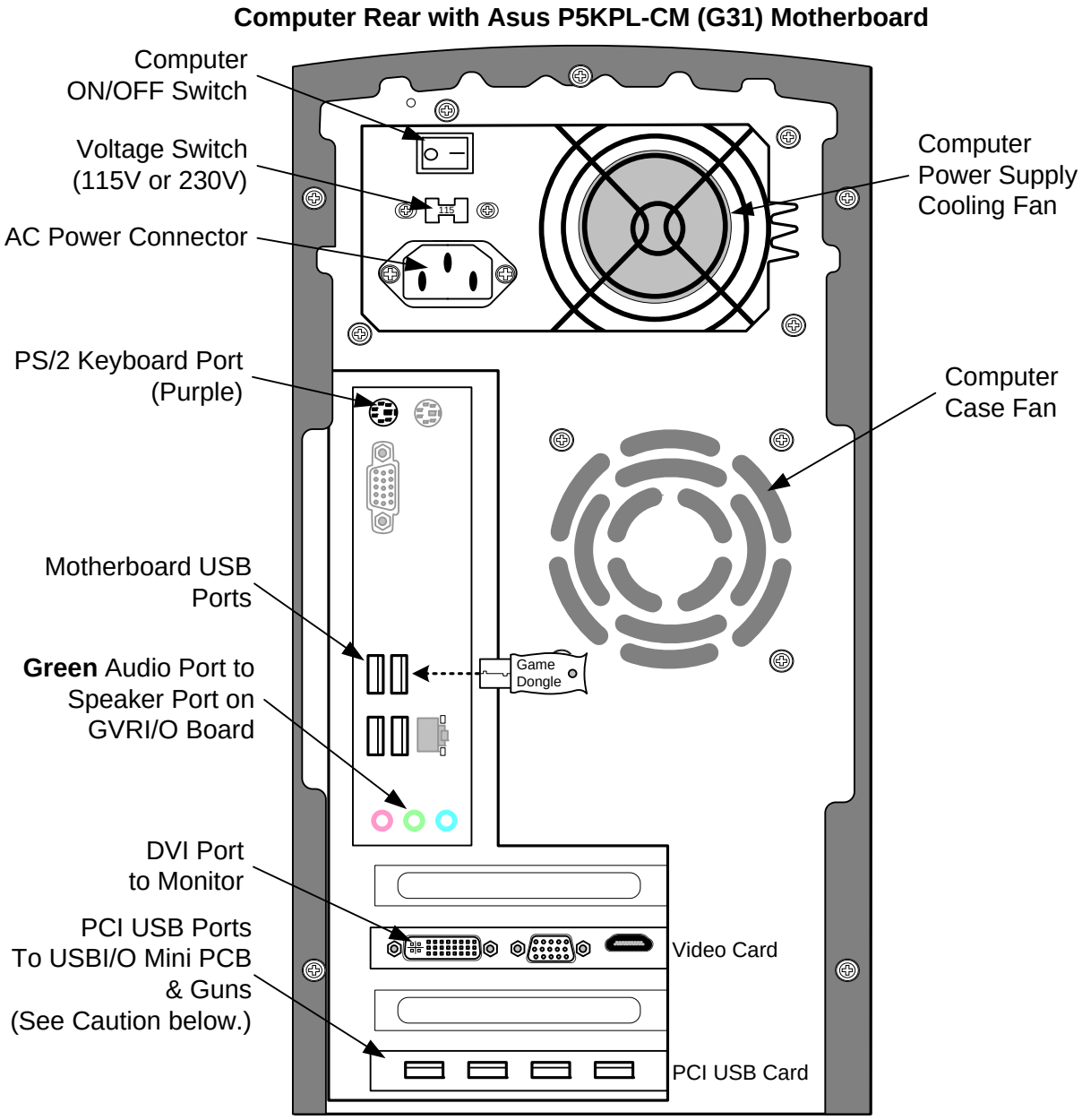
Computer Rear with Asus P5KPL-CM (G31) Motherboard
Computer ON/OFF Switch
Voltage Switch (115V or 230V)
AC Power Connector
PS/2 Keyboard Port (Purple)
Motherboard USB Ports
Green Audio Port to Speaker Port on GVRI/O Board
DVI Port to Monitor
PCI USB Ports To USBI/O Mini PCB & Guns (See Caution below.)
Computer Power Supply Cooling Fan
Computer Case Fan
Game Dongle
Video Card
PCI USB Card

Caution: Disconnect power before changing any USB connections or you will damage the PCBs.

Figure 33. Computer Rear Panel Diagram

Warranty Service

If at some point you require warranty service, contact your authorized GLOBAL VR distributor.

Warranty Information

LIMITED WARRANTY FOR PARADISE LOST (North America Only)

All software and accompanying documentation furnished with, or as part of the Product, is supplied "AS IS" with no warranty of any kind except where expressly provided otherwise in any documentation or license agreement furnished with the Product.

During the warranty period, GLOBAL VR® will, at no charge, repair the Product, provided:

- Purchaser believes that the Product is defective in material or workmanship and promptly notifies GLOBAL VR® in writing with an explanation of the claim;
- All claims for warranty service are made within the warranty period;
- Products are returned adequately packed and freight prepaid to GLOBAL VR®'s designated service center;
- GLOBAL VR®'s inspection or test of the Product verifies to GLOBAL VR®'s satisfaction that the alleged defect(s) existed and were not caused by accident, misuse, neglect, unauthorized or attempted repair or testing, unauthorized modification, incorrect installation, vandalism, failure to follow the maintenance schedule or procedures; or operation in out-of-specification environmental conditions.

GLOBAL VR® will return the repaired Product freight prepaid to the Purchaser. All freight costs associated with replacement of warranty parts after expiration of the original warranty period are the responsibility of the Purchaser. GLOBAL VR® is not obligated to provide the Purchaser with a substitute unit or on-site service during the warranty period or at any time. If after investigation GLOBAL VR® determines that the reported problem was not covered by the warranty, Purchaser shall pay GLOBAL VR® for the cost of investigating the problem at its then prevailing per incident billing rate. No repair or replacement of any Product or part therein shall extend the warranty period as to the entire Product. The warranty on the repaired part shall be in effect for the remainder of the original warranty period, but will not exceed the original warranty period.

Purchaser's exclusive remedy and GLOBAL VR®'s sole obligation is to supply or pay for all labor necessary to repair any Product found to be defective within the warranty period and to supply, at no extra charge, new or rebuilt replacements for defective parts. If repair or replacement fails to remedy the defect, then, and only in such event, shall GLOBAL VR® refund to Purchaser the purchase price for said Product. Purchaser's failure to make a claim as provided above or continued use of the Product shall constitute an unqualified acceptance of said Product and a waiver by Purchaser of all claims thereto.

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Technical Support

Service & Parts

Hours: 7:00AM–5:00PM Pacific Time, Monday–Friday
Phone: 408.597.3435
Fax: 408.597.3437
E-mail: techsupport@globalvr.com
Website: http://service.globalvr.com
Extended Service Hours: Monday–Friday 5pm—Midnight
Saturday & Sunday 7:00am—Midnight Pacific Time

Free telephone, e-mail, and online support are provided for systems during the warranty period. GLOBAL VR® Technical Support can help you troubleshoot problems and diagnose defective parts. We can also answer questions about the operation of your game.

When you contact Technical Support, please provide the information listed below to assist the Technical Support representative in solving your problem quickly. For your convenience, space is provided to write important numbers.

- Cabinet Serial Number: _____
- Build Number (from Operator Menu): _____
- I/O Board Number (from Operator Menu): _____
- Your mailing address and telephone number.
- A summary of the question or a detailed description of the problem with your cabinet.

The additional information listed below, as applicable, may assist Technical Support in solving your problem quickly.

- Specific error message
- Any changes made to the system
- Date of latest software install or upgrade
- For game-play issues, the game mode and number of players

To comment on this manual, please e-mail: techpubs@globalvr.com